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OF THE

ASIATIC SOCIETY OF BENGAL,

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"It will flourish, if naturalists, chemists, antiquaries, philologers, and men of science, in different parts of *Asia*, will commit their observations to writing, and send them to the Asiatic Society at Calcutta. It will languish if such communications shall be long intermitted; and it will die away if they shall entirely cease."—Sir Wm. Jones.

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1853.

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* Withdrawn by the author, as irrelevant to his paper on the Dust Whirlwinds.

† Not received vide Note at the foot of page 621.

Pages 331 and 332 in No. IV. are to be replaced by the two pages of the same figures published in No. VII.

* Not received: vide note at the foot of page 621.

JOURNAL

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ASIATIC SOCIETY.

No. III.—1852.

The Kurrukpoor Hills.—By Captain S. R. SHERWILL. *(Communicated by Captain* THUILLIER.)

The group of hills lying immediately to the South of the station of Monghyr, and known as the Kurrukpoor Hills, being named after the town which bears that name and which is situated to the East of the hills, is an offshoot from the northern face of the Vindhya Hills, measuring 30 miles in length, with an average width of 24 miles; and although the group in the mass lithologically resembles the Vindhya Hills, it still contains within its valleys and on some of its higher peaks, rocks of a much softer nature, such as silicious hornstone, chlorite, chlorite schist, actinolite, actinolite schist, claystone, hornblende, massive asbestos, and a decaying rock known to the natives by the name of Khari, it is a soft greasy, white, or greyish rock associated with and passing into hornstone.

This group of hills no where rises to a greater height than eleven hundred feet, which is the height of the high table-mountain thirteen miles south of Monghyr, named Maruk; in the interior are extensive valleys, forests, precipices, hot wells, mountain torrents, quarries and a few villages.

The following are extracts from a diary kept whilst traversing these hills:—

2*nd September*, 1847.—Left Monghyr with a party of friends to explore the Kurrukpoor Hills and to visit the sources of the Mun and Anjun rivers, said to rise from hot springs.

Rode to Lallajehangeera, seven miles, situated immediately under the western face of the hills; where there is an Indigo factory and bungalow. The road after leaving the city of Monghyr, passes through fine rice fields the whole way; from Lallajehangeera is a beautiful view of the hills to the south, with Maruk towering over all. Towards the evening visited the Putturkhan valley, two miles from the bungalow and near the village of Mosurgunje; it is a small narrow valley or cul-de-sac in the hills, about three quarters of a mile in length and a quarter of a mile broad, across which and over the hills to the plains on the East, runs a footpath; the pass is called the Umjoorghat. On entering the valley, which you do by a rather narrow entrance, the valley is seen on the right and left and a hill in front closing the view; turning sharp round to the left you find yourself at the foot of a perpendicular wall of a dazzling white quartz upwards of two hundred feet in height, rent into a thousand parellelopipeds by deep fissures and by veins of quartz, all cutting each other with the greatest angular exactness, giving the rock the appearance of being faced with gigantic hatchments whose lower and upper points are angles of 45°. This wall faces the east. Immediately to the north east of this wall and across the valley is an old quarry of hornblende, now no longer used; not that it is exhausted, but numerous other quarries being open in different parts of these hills and yielding a superior stone, this one has been neglected; several large slabs of six and eight feet in length were lying outside the valley, they had been quarried for a Mahájun, who dying before he received them, they were left on the spot where they happened to be when the news of his death reached the quarry men. The hornblende is of a fine dark green or blue nearly approaching to black, takes a fine polish, is easily carved, but occasionally fine blocks are disfigured by nests of iron pyrites which being acted upon by the atmosphere and rain, leave large stains of the red oxide of iron on the surface. This hornblende rests upon a schistose rock: it is claystone, which is also found on the opposite side of the hill.

Iron-stone and reddle lay strewed about the valley.

The hills about the quarry are covered with low jungle, stinging nettles, called by the natives Rukusi, and Ferns.

The quartz strata dip 5° to the West.

3rd September.—Marched to Azimgunje, a small village ten or

twelve miles to the west, lying under the northern face of the hills. The first five miles of our road was through rich rice fields up to the men's knees in water; when we arrived opposite the Maruk valley, a mountain torrent which descends with great violence from this gap, was found so swollen and deep that we all were obliged to plunge in and swim across; our road now lay through a handsome forest of mango, acacia, mimosa, phœnix, sakúa, peepul and banian trees, besides sterculia, bauhinea, bamboo, zyzyphi, and butea, both stunted and climbing: the road strewed here and there with quartz rocks.

In the evening went to the Luheytah quarries where a coarsely granulated quartzose rock is quarried for mill stones. The quarry is on the flank of a long naked quartz rock on the southern face of a detached hill named Juthootteea extending for half a mile through a dense jungle, the naked rock resembling the rounded back of some huge monster. This stone is quarried and taken in the form of native mill-stones to Monghyr, from whence it is exported in great quantities to Bengal and other parts of India. The rock is a porphyritic quartz, with translucent masses of quartz embedded in a greenish grey substance also resembling quartz.

4th September.—Ascended the hills by the Gorya Khoh Ghat, a deep wooded glen where hornblende and hornblende slate of a good quality is quarried in large quantities and exported to Monghyr, the associated rocks being chlorite schist, massive asbestos resembling a foliated lithomarge, slightly fibrous when crushed, and clay-stone. The road up the Ghat, which is a mere foot-path, passes over asbestos and clay-stone; the asbestos is not of the fibrous kind, but appears as an agglutinated species of this mineral. Its general appearance is that of a rock composed of very small and firmly adhering horizontal strata, of about one or two inches in thickness composed of vertical agglutinated shining fibres of asbestos, it is greasy to the touch, its fracture is shining and glossy like silk, streak earthy, colours lively blue, glistening, jasper red or yellow; near the foot of the hill Maruk, at Maruk Ghat these minute strata are seen in great perfection, having been at that spot denuded by the action of a mountain torrent into a succession of precipices some hundred of feet in height. At the summit of the Ghat we entered a dense forest of underwood and trees, the road winding amongst low hills of asbes-

tos; at one mile from the crest of the Ghat we passed over laterite, then hornstone of various colors. We were now in a deeply wooded valley of great beauty, the principal trees consisting of Sakua, Carissa carundas, Butea, Diospyros, Terminalea, Grewia, Dalbergea, Bombax, Boswelia thurifera, Dyospyros ebenum, a variety of Bauhinias both B. scandens and B. variegata, besides a scattering of Mimosa catechu, a wild arrowroot, ferns, Euphorbia, Asclepiadeæ and Liquorice. As we advanced into the hills the jungles became more and more dense; about a mile from the top of the Ghat we passed several heaps of iron slag, the refuse of the furnaces of the hill people, who collect the iron ore which is common all over these hills, smelt it in the rudest of furnaces and exchange the metal with the lowlanders for salt, tobacco, or rice; at the second mile we stopped at a buffaloe "baithan" or night rendezvous for buffaloes, by name "Buneeara baithan," changed our clothes, which were dripping wet from rain, drank some milk and proceeded through a narrow valley for two miles to the banks of the hot stream the Anjun, leaving Bhoondh Bhuraree a small village a few hundred yards to our right. Finding a fine deep pool of water in the stream with a temperature of 108° completely overshadowed with forest trees, we bathed, a most refreshing proceeding after our long and wet walk; leaving the road we proceeded to the west, up a densely wooded and narrow valley; the first part of the road was over a quaking moss bog, through which ran the Anjun; half a mile brought us to the source of this hot stream which for the last quarter of a mile had become much too hot for our feet. The spot from whence the Anjun rises is at the end of a narrow valley, the water bursts from two orifices in a confused heap of Jaspideous hornstone rocks, bearing a peculiarly desolate appearance from the absence of vegetation on or near the rocks, and from the burnt up appearance of the hornstone from which the water is seen pouring out at a temperature of 145° Faht. a fine porous botryoidal silicious sinter deposited from the hot water covers all the rocks near the springs. The Anjun, after a short course of twelve miles, falls into the Nuktee, which latter stream falls into the Keeul a tributary to the Ganges into which it falls at Soorujgurha. A mile and a half brought us to Baboodera and Goormaha, two small hamlets on the banks and in the valley of the Anjun, around which a few hundred acres of land have been cleared, yielding a boun-

tiful crop of Indian corn, junera, cotton, pulse, a small quantity of tobacco, a few chillies and edible roots. The inhabitants principally consist of Sonthals, from whom we experienced every kindness they had in their power to bestow. They gave us a house to sleep in, milk, water and fire; beyond these necessaries of life their generosity could not proceed. A tolerable quantity of iron is smelted near both of these villages, generally in the jungle for the sake of being near the spot where the charcoal is burned.

5th September.—Started early in the morning to visit the hot springs one mile from the source of the Mun river. Half a mile after leaving Goormaha we passed through a small hamlet Misree Bungla, and entered a very narrow valley in which the Mun takes its rise, densely wooded on both sides, the forest climbing to the summits of the hills both on our right hand and on our left; the rough and unequal road passing over asbestos and hornstone with occasional masses of quartz; when nearing Bheembandh the strata of asbestos are exhibited as vertical lamina, very fine,—of a red, black, blue or grey colour. Two miles and a half walking, during which time we had crossed and re-crossed the narrow bed of the Mun, brought us to the descent into the plains of Kurrukpoor and to the village of Bheembandh, a small collection of huts surrounded by rice fields and palm trees, near which are the hot springs. The first spring we visited is situated about three hundred yards to the North of the village immediately under a small detached hornstone hill named "Mohadewa," from whose base the water issues in a fine stream at a temperature of 147° Fahrenheit; this was the hottest spring we met with in these hills; the whole of the hornstone rocks over which this water flows appears to be partially decomposed as well as encrusted with a siliceous sinter; a few hundred yards farther to the North, at the foot of the hornstone hill "Dumduma," we came upon a region of hot springs, hot water appeared to be spouting from the ground in every direction; the principal springs, of which there are eight or ten had a uniform temperature of 145°, all rising within a space of about three hundred yards square. Whilst our party was engaged bathing in the stream containing the united waters of all the hot springs and which falls into the Mun, I made the following observations. At the source of the Bheembandh hot-well at the foot of the Mohadewa hill, the water as before observed

was 147° Fahrenheit. In this temperature nothing appeared to grow or live; at 145°, growing under the water, I found a green slimy moss in full vigour adhering to the hornstone rocks: from 130° to 125° shrubs, trees, grass and ferns grew indiscriminately on the edge of the water, into which they had pushed their roots: at 114° I found large shoals of a very small and active silvery fish apparently enjoying their hot life, but upon being driven up the stream into a higher temperature they showed great distress; at 117° they darted about wildly; at 119° they died instantly; for at this temperature they turned on their backs, their air-bladders bursting a few seconds afterwards; at 120° I found the larvæ of the Libellula or Dragon fly as active as these slow creeping creatures ever appear to be, apparently enjoying the high temperature previous to undergoing their final metamorphosis. Frogs were swimming about in 114°; and I found a huge black scorpion and numerous frogs dead in 130°. In 120° I saw a large lizard called by the natives "Bahumnee" rush across the stream as if in great agony, he had been scared from the jungle by my servant; with a desperate struggle he got across the stream which was about ten feet broad and a few inches deep: across numerous hot streams are of course many footpaths used by the cultivators round about Bheembandh, but no where at the point of crossing did I find the water above 120° and even that temperature made the men and women hurry across the stream when fording from bank to bank; to our European skins the heat of 120° was intolerable, nor could any of the party walk coolly across any of the fords at that temperature without being severely scalded though not blistered.

Luxuriant crops of rice are raised by the aid of the hot streams, large fields being fed by the water, but at a reduced temperature by leading it in devious courses to the cultivated land.

The united waters of all these hot springs are conveyed away by the small stream called the Mun, which, after a passage through a narrow and densely wooded and bamboo-fringed valley, flows through Pergunnah Sukhwabadee to the Ganges, sixteen miles below Monghyr.

From the hot springs we retraced our steps to the Bheemkoond, a small pool of cold water under an overhanging hornstone rock in the river Mun; this pool sacred to Bheem, the Hindu Hercules, a place visited by numerous pilgrims and which we were informed by the

Bráhmans was fathomless, we found by plumbing it by the aid of a long jungle creeper charged with a heavy stone to be only thirteen feet deep. The falsehood of these men is only to be equalled by their impudence, for they declared we never reached the bottom.

A few hundred yards from this pool and down the stream the asbestos changes into actinolite where it is seen in columnar masses from ten to fifteen feet in height, and when decayed is of a bright yellow, red and bluish colour; the living rock is of a pale emerald green with glassy fibres; this mineral is also found in the bed of the Anjun nullah where the stream leaves the high land through a narrow gap in the hills named the "Kookur Jhup or the Hound's leap."

6th September, 1847.—Left Bheembandh early this morning; leaving the hot wells on our left, we struck into a valley flanked on the right by the Ghordour hill and on the left by the Gorya hill, both of hornstone, and well wooded; at one mile ascended the Kohburrun hornstone hill to the crest of a deep and beautifully wooded dell named Narookole; from the summit of the pass the view was particularly pleasing, though nothing but dense forest and hills meet the view; descended the Narookole path down to a grass-clad valley through which the Sundasin nullah finds its way to the plains of Kurrukpoor. After a very wet walk in the tall grass between the Keel Tokwa hill on the right hand, and Sundasin hill on the left, and after crossing and recrossing the stream numerous times, we were fairly brought to a stand still by our guides pointing to a nearly perpendicular mountain over which they told us we must climb. We tried many points to endeavour to find a passage for a couple of ponies that were with us, but without success; they were obliged to retrace their steps and to go round several miles to the Suwasin pass over which they eventually made their way. As we mounted the steep Keel Tokwa, we perceived that the Sundasin nullah flowed several hundred feet below us in deep shade through a gap in the hills for nearly half a mile in length, the sides of which were quite perpendicular, and not more than a few hundred yards apart; the gap has the appearance of being a volcanic rent in the white hornstone rocks which are prettily fringed with Sterculia, Boswellia and Butea; from the highest point in our passage over the Keel Tokwa we had a capital view of the greater part of the jungles to the West.

Descended a stony pass strewed with quartz, hornstone and iron ore, to Soogee, a small hamlet situated on a rising ground where iron is smelted; it stands on the banks of the Dhodhanee nullah in whose bed I found a bed of a white schistose rock, greasy to the touch and resembling the asbestos of Bheembandh.

7th September, 1847.—Travelled this day over broken and uneven ground covered with a dense forest of fine trees, the rocks being quartz, hornstone, claystone and iron ore; the forests composed of a few fine trees of sal, (shorea robusta,) fit for beams of the largest house, with an abundance of *Sakúa*;* carissa carundas, or wild corunda, with a delicious perfume; butea frondosa; diospyros ebenum, or ebony, asun, terminalia; phalsa, grewia; sisoo, dalbergia; semul, bombax heptaphyllum; salu or sale, boswellia thurifera; keonjee, sterculia; euphorbia of a large size; aonla, myrobalans phylanthus emblica, kudum, nauclea; chironjee, c. sapida; bel, ægle marmelos; mynphul, vangueria; aheens or mukkoh or kuttow; dhaw, grislea tomentosa; dhaumin; panun; ghumbhar; koosoom; several bauhinias; koombhee; umultas, cassia fistularia; and in the deeper glens and vallies were asclepiadea, liquorice, turmeric, and ferns of several kinds; of the latter, the adiantum attains to a large size and great beauty, large ferns were observed growing parasitically on trees.

A rough and steep scramble through these trees brought us to the summit of the hill Maruk, a table-topped hill of eleven hundred feet elevation, from whence we had a splendid view of Monghyr station and town thirteen miles to the north of us; of the country beyond the Ganges; or nearly one hundred miles of the Ganges; winding through the highly cultivated plains of the districts Patna, Monghyr, and Bhaugulpore; a good view of the Rajmahal hills to the East, distant seventy miles and of the jungles at our feet, clouds shut out the view of the Himalaya mountains which a few days before we had seen from Monghyr in the plains, spread out in a vast panoramic view, their snowy sides tinged with the beams of the rising sun.

The summit of this mountain is about a quarter of a mile in length and a few hundred yards in breadth, perfectly level and covered with a matted and tangled jungle of bamboos, mimosa catechu, and sakúa trees. The spot, from its elevation deserves to have a house or two erect-

* Shorea robusta in its early growth.

ed on its summit where invalids from Monghyr would, during the great heats of summer find relief from the difference of temperature.

The summit of the mountain is composed of a coarse ferruginous nodular clay somewhat similar to laterite, resting upon asbestos, which lies upon hornstone, and beneath all, quartz rock, the strata of which dip 85° to the south-east, direction of strata north and south. It is difficult to say where the quartz commences or the hornstone ceases, as they pass into each other by such gradual gradations.

Looking north and down into the jungle, large bare masses of quartz rock are seen protruding through the surface of the country and overtopping the highest trees, with a dip in the strata of 80° to the north-east.

The ferruginous clay-like laterite at the summit of the mountain is excavated into natural caves highly polished by the frequent visits of the long-tailed monkeys which abound in the woods in these hills.

On the summit of this mountain we fell in with several of the gigantic yellow webs of the epeiræ spider, which are as remarkable for their strength of web as they are for the variety of their forms and colors; the present specimens were red and black, of a formidable size and very active; some of the webs we found stretched across our path measuring from 10 to 20 feet in diameter, that is, including the guy ropes which are fastened to some neighbouring tree or clump of bamboo; the reticulated portion being about five feet in diameter, in the centre of which the spider sits waiting for his prey. The webs from their great strength offered a sensible resistance when forcing our way through them; in the web of one of the spiders we found a bird entangled and the young spiders about eight in number feeding upon the carcass. The bird was, with the exception of his legs and beak, entirely enveloped in web, and was much decomposed; the entwined web had completely pinioned the wings of the bird so as to render his escape impossible. The bird was about the size of a field lark and was near the centre of the web; the old spider was about a foot above the bird; we secured, measured and bottled him. His dimensions were six inches across the legs; he was armed with a formidable pair of mandibles.

During the day, cleared the jungle around the Trigonometrical cairn, and towards evening commenced building a temporary hut of boughs and bamboos to sleep in. At sunset, set fire to the jungle that we had cut down and which we had piled to the height of 30 feet, somebody volunteering a clean dry shirt to light the fire with, as every thing

had during the day become wringing wet from continued heavy rain, the fire rose into a magnificent blaze, and was visible for seventy miles. During the night the rain descended in torrents, broke into our bough hut and deluged us ; the morning's light showed the whole party of six individuals lying in very thin mud, and thoroughly drenched to the skin.

8th September, 1847.—Descended Maruk hill on the Northern face by a very steep and difficult footpath through a dense forest and rode to Lallajehangeera.

9th September, 1847.—From the Lallajehangeera bungalow a footpath leads over the hills, (from the summit of which is obtained a beautiful view of the Ganges and country in general) to the hot springs of Rishikoond, which rise from several springs on the eastern side of the hills at a temperature varying from cold water to 104°, which gush out with a fair body of water from the foot of the Jaspideous hornstone hills. The springs are in a prettily secluded nook in the hills, well filled with spotted deer, jungle fowl, a few tigers and bears.

This spur of the hills forming the eastern horn of the recess named Maruk, and upon which the Fort of Monghyr is built, extends to beyond the Ganges where it appears as several naked quartz rocks, one of which standing in the middle of the Ganges, causes the destruction of numerous boats during the rains, when the river rushes over it with a great noise, heard at the distance of several miles. At Monghyr the rock is quartz, several outcrops of which are seen in the fort and which are said by the natives to increase yearly in size, by a gradual upheaval. The foundations of the north-western bastions are all based upon the quartz rock, otherwise the fort must long ere this have been swept away by the great force of the current ; some rocks in the bay have caused damage to several steamers, which might be obviated by a buoy or flag being attached to each hidden danger. The small hill named Peerpuharee about three miles east of the station, forms the most northern point of the Kurrukpore hills, where it terminates in a perpendicular bluff overhanging the old bed of the Ganges; the quartz is white and glossy, traversed by numerous veins of milk-white quartz running north-west, south-east. Crossing these veins at acute angles are many veins of a black iron ore having the appearance of having been infiltred from below in a gaseous form. Near the summit of the hill where the slope has been cut away to form the road, a bed of massive asbestos with ribbon-like strata has been cut through; penetrating this mineral are delicate veins of hornstone much contorted,

the whole bed dipping to the south 45°, direction of strata S. W. N. E, The asbestos pounded feels soft and is slightly fibrous; associated with the asbestos is indurated talc, in amorphous masses, it writes upon glass, which writing is invisible until breathed upon.

At the southern foot of the hill is a bed of chlorite and hornblende schists, but no where possessing fissility sufficient to render the slates of any use. On the north-western side of the hill I found a conglomerate of rolled pieces of asbestos, chlorite, hornblende, quartz and hornstone united with a calcareous cement, the bed extending for thirty or forty yards along the base of the hill.

Leaving Peerpuharee hill and proceeding in a southerly direction across a cultivated plain towards the hills, the same quartz is again met with, over which a red clayey and gravelly soil containing nodules of iron ore is thinly strewed; it is in this plain that the Seetakoond hot springs take their rise from a group of hornstone rocks, barren and sterile in appearance. The temperature of the spring is 140° and seldom varies.

Six miles from Peerpuharee in a direct southerly direction, is a small fault in the hills which serves as a ghat or passage through the range, the name of the gap is "Dusdooar" and is in ribbon claystone, wedged in between quartz and hornstone; from this handsome stone which exactly resembles unbaked and unsilicified ribbon jasper, was built the greater portion of the Monghyr Fort, and considering its great softness it is wonderful how it has lasted so well and so long as it has done; its colors are exceedingly lively and are pearl-blue, brown-red, yellow, bright-red, and lavender-blue; the fracture is dull earthy, with glimmering particles, probably silvery mica, but much too small to be discernible even under a powerful lens; this claystone passes into massive asbestos.

In the small Kewar Kole valley containing the Rishikoond hot springs, is a curious cleft in the hornstone rocks twenty-five feet in width forming a series of cascades. The strata dip 2° to the north. Higher up the valley large masses of hornblende appear, evidently belonging to the same strata quarried on the opposite side of the hill at Puttur Khan. Quantities of iron ore lie scattered about the small valley, but greatly hidden by the luxuriant foliage of the elegant trumpet-flowered Hastingsii which was in full blossom in March, the period of our visiting the spot.

A few miles to the south and situated in a dense forest is the Ghora Khoor, a wide cleft in a perpendicular and naked wall of a pure white and rose colored quartz, intersected in every direction with broad and narrow veins of milk-white quartz ; this cleft has the appearance of having been violently effected by the sudden bursting through this natural barrier of a large body of water, which must have accumulated in a deep valley immediately to the west or behind the wall. During the rainy season the water from this valley rushes through this gap with amazing fury forming a small cascade.

Hindu tradition asserts that the wall was broken down by a blow from the foot of a Rajah's horse when out hunting in these hills ; the impress of whose hoof is still to be seen on the summit of the rock.

At Pandu, a small village to the south of the hills corundum has been found, but I could not discover the spot from whence it is procured.

To the west of the hills in a valley, shale was reported as having been discovered, but, as neither specimens nor locality were ever seen by me, I am unable to say how far true the report may be.

Produce of the Kurrukpoor Hills.

Timber of various sizes, none very large, principally sál, sakúa, asun, dhao, khoombhee, muhooa, plas, sissoo, ebony, which are principally used for native hut building, for ploughs, bedsteads, pestles and mortars, yokes, masts for small boats and firewood ; bamboos in great quantities ; several barks, dyes, gums, and grass.

Hornblende slates ; millstones, curry-stones, iron of a good quality, khari, a white earthy substance used for whitewashing buildings and for ornamenting pottery. Building stones of various kinds, such as claystone, massive hornblende, and hornstone ; the hornblende is also used for tomb-stones, plates, dishes, sun-dials, and is much exported to all the large cities ; corundum.

A vein of argentiferous galena was discovered at the base of these hills in 1847, but as the discoverer keeps the site a secret, no more can be said about the matter, the ore was tested in Calcutta and found to contain much silver ; a dispute about the title-deeds of the village lands is the cause of the secrecy in the matter.

A large amount of treasure is said to be hidden in the valley of the Mun, deposited there during troublous times by the Rajahs of Kurrukpoor. Europeans have searched for the spot and have failed in their search.

LEBBEY

The "Abéw" or Chief of the Bookee Clan
of the
Heuma or Shendoos.

Notes on the Heumá or "Shendoos," a tribe inhabiting the hills North of Arracan. *By Capt.* S. R. Tickell, 31*st B. N. I.*

The immense tract of forest and mountains, intervening between the valley of the Irawaddy in Burmah, and the alluvion of Arracan, is inhabited by wild and partly independent hill tribes, whose intercourse is confined almost solely to themselves ; the communications of each class being limited to the neighbouring one. Those bordering on the populous and comparatively civilized tracts under our Government, have been described [I believe in the pages of this journal] by more experienced narrators than myself. But some of the more remote and wild sub-divisions of these people have not yet come within observation, and amongst these the Shendoos, though well known by name and repute in Arracan, have never yet been visited by the people of the plains, nor has a single specimen of this race been seen, I believe, either by Mugh or European in Arracan, until 1850 when two emissaries or spies from them met me at a hill village some distance up the Koladyn river. And again this year, when two more, a chief and his follower ventured as far as Akyab itself, and from these I collected the few details here given of this people.

The Koladyn or Gyatchafa river runs in a direction from N. N. W. to S. S. E. At about 80 miles from its mouth the alluvion ceases, and a mass of hills abruptly commences without any undulating or table-land between. The ranges are low with insulated bordering patches at first, but soon rise in mass after mass—tier upon tier—to the Yeomatoung range to the Eastward, and the "Blue Mountains" on the Chittagong side. These hills are chiefly (if not entirely) of sandstone, excessively steep, buried in jungul, and contiguous, leaving deep narrow water-courses between. The two largest of these, directly tributary to the Koladyn are the Peekhyoung, falling into it at its right or Westerly bank in Lat. 21° N. and just where the hilly country begins, and the Meekhyoung entering on the opposite shore in about Lat. 21° 15′. This (the latter) stream which is about a hundred yards wide at its mouth and very deep, runs from a N. E. direction between steep-rounded hills for about 10 miles from the inlet, and then trending gradually round comes down from due North, collecting

its waters by the confluence of innumerable water-courses trickling from masses of high hills—about 21° 50′ N. Lat. inhabited by the "Koon" tribe: (The people lower down south and nearer the Koladyn being called "Koomwees.") To the North and N. E. of the Koons the hills rise higher and higher, and amid this region, circumscribed by a space which, from all the information I can procure, I place between Lats. 22° and 23° N. and Longs. 93° and 94° E. lies the country of the Shendoos.

This mountainous tract appears in Pemberton's map to be bounded to the East by the Nankathey khyoung, or Munipore river: but in all other directions it mingles indefinitely with other ranges, and an unbroken extent of forest.

The Shendoos, or, as they style themselves, the "Heumá," are subdivided into several classes: my informant Lebbey, was the chief or "Abeu" of the one nearest to the Koons, by name "Bookee," consisting of 350 houses, all in one village.

The others of his people or nation, he gave me the following list of, describing each class as lying further and further to the N. E. but of the distances between each, I could gather no information—beyond that, the last one on his list, was as far from his village on the one side, as Akyab on the other, and the last he stated himself to have been thirteen days in reaching. Next to Bookee is—2. Thubbau, presided over by Tynkho and Wantlye Abeus; consisting of 400 houses, in two villages.

3	Lalyang,	Tawho Abeu,	100 houses.
4	Tumboo,	Khooloung Abeu,	100 houses.
5	Roongfe,	Shíkho Abeu,	50 houses.
6	Yanglyng,	Khenoung Abeu,	250 houses.
7	Hoothé,	Kheachoo,	240 houses.
8	Mowtoo,	Gebbo Abeu,	500 houses.
9	Tantlang,	Whuhnyn Abeu,	600 houses.
10	Hekká,	J'hachow Abeu,	

This last town is described as containing 2,000 houses!—as being in entirely open country and clear of all the hills—and as having much cultivation about it. The inhabitants, said Lebbey, use carts and ride on horses, and the Shendoos pay tribute to their chief. My informant had never been himself further than Mowtoo, and spoke of Hekká

from hearsay, but emissaries from the last mentioned place had been as far as his town of Bookee, demanding tribute, which they had received last year from him in the shape of a musket, a dog, a large pig, and a bundle of cotton-thread and one of cotton-wool from each house.

From these particulars I am inclined to suppose Hekká is not a Shendoo town at all, but a district in Burmah. In Pemberton's map the only name resembling this that I can find is "Aika" which does not however appear marked as the capital of any division or district, and is moreover some way to the S. E. of the Shendoo mountains, about 94° E. Long. and 21° 40′ N. Lat. quite out of the direction described by my informant. It appears moreover that the people of Mowtoo, Tantlang and Hekká, speak a different dialect to the Heumá langnage. This may probably then be Burmese, but Lebbey's entire ignorance of that language prevented my ascertaining this point.

The houses of the Heumá, he tells me, are made of timbers by the more opulent, and of bamboos by the poorer classes; thatched with grass, and all on raised platforms, a peculiarity common to the Mongolian races from eastward of the Hindu Koosh down to Borneo. They are rich in poultry and pigs, and cultivate the grains usually raised in jungly hills, such as maize, bajra, and hill rice, [of this but little], also plantains, yams, kudoos, ginger, cotton, til, linseed, and sugar-cane, [of which they make no use beyond eating it in its natural state.]

They prize dogs as food, and also all sorts of game [deer, wild pigs, &c.] and elephants, the flesh of which they are very fond of. With fish they are almost unacquainted, having indeed no other name for it, than the Burmese one of Ngá.

The elephants are generally shot with large heavy arrows, set in trap bows of immense size, the plan of which by description must be very similar to that of the bows set by our Bughmars in India. The Shendoos however set two, pointing inwards, both connected by the same line that pulls the trigger, so that the animal passing through or touching the line with his foot, receives an arrow into each side. This double dose is the more necessary, as the Shendoos appear quite unacquainted with the use of any venomous poison. Elephant's teeth form one of their principal articles of barter.

Commerce, with this wild people is of course extremely limited; their imports are passed from village to village, few of the more civilized people of neighbouring countries caring to pass far into the interior of a race which they look on with such dread. Lebbey informed me, the people of his class, took annually to the Koon frontier, elephants' tusks, gongs, [which they get from the province of Yeo in Burmah], bee's wax, home spun plaids, and cotton turban cloths; which they exchange for salt, muskets, cloth, coral and bead necklaces, lead, powder, brass kutoras and thalees, and brass rings. I was curious to know where they got the brass from, which adorns their shields, but could get no information more lucid than that it came from a country, one moon's journey to the N. or N. N. W. which was governed by a woman!

Their weapons are bows and arrows, [small, and becoming fast superseded by muskets,] short spears, and shields made of buffalo hide ornamented with brass plates and tufts of goat's hair dyed scarlet.

These people are polygamous, having from 2 to 4 wives each; the number being solely limited by the length of the purse. They purchase them from their parents with gongs, cloth, &c. the largest price being paid for the first wife and less for those subsequently added to the household.

They may marry two sisters at once, but not more, and unlike their southern neighbours, the Koomwees, are prohibited from taking to wife their step-mothers. Daughters are entirely excluded from succession to property, every thing goes to the eldest son. If he be a minor the uncle, or if there be none, some one next of kin, takes charge of the property, which, however, he is not called on to account for afterwards unless he choose! If the eldest son have married and settled in life at his father's death, he gets no property, and the whole of it is divided amongst his younger brethren. Should there be none however, he succeeds to it. In no case is anything left to the widows; they are turned adrift, or left to the charity of the eldest son. They bury their dead, digging a hole in the ground to the depth of a man's height, which is paved with flag-stones and lined with boards, into this the corpse is placed in a supine posture, head to the east, together with the deceased's weapons, gong, &c. The hole is then covered with strong sticks, plants, earth, and over all, a large stone.

The body is kept two or three days in the house after death, but without any embalming or other preparation, so as to become often quite putrid before interment.

The Abeu or head of the clan dispenses justice. Theft is punished by the restoration of the property stolen and fine equal to its value.

For murder, the punishment is making over to the relatives of the slain, a number of slaves, from two to seven, according to the wealth or importance of the deceased, and pigs in the same proportion. Should the offender not have slaves, he must give up property equivalent to them, or, in default, his own children. If he have neither slaves, other property, nor children, he is slain by the nearest of kin to the deceased with the weapon by which the murder was committed. But this is an event of such rare occurrence as to be, so to say, matter of legend. Drunken quarrels attended with affray and wounding are of frequent occurrence: but no murder had been committed within my informant's recollection.

The Heumá were formerly at war with the Koons, but now appear to be at peace with them and all the tribes to the south or along the Aracan frontier; but they have constant fights with other tribes, whose language, my informant said, was strange to him.

These people lie to the N. E. and E., and have their legs tattooed like the Burmese. Lebbey stoutly denied having made any excursions for slaves lately, and insisted that all those slaves in his village, were descendants of people captured generations ago. But he confesses that Shendoos have carried off slaves from Chittagong rather recently, and enumerates the following tribes as having been concerned in these forays. Yanglyng (before mentioned), Roopoo [Tynḳho Abeu,] a clan living to the N. W. of the sources of the Koladyn; and Tougshé, [Ekké Abeu,] a clan of about three hundred houses, North of Bookee.

Of the theological notions of the Shendoos I could gather but very meagre information. They regard the sun [Nye] and the moon [Khiapá] as deities, and sacrifice pigs and cattle to them at the commencement of the rains. They have no divisions of time, except by seasons, distinguishing these by the different stages of agriculture proper to them, ploughing, sowing, reaping, clearing jungle, &c.

Lebbey is a short, rather muscular man, with the well developed thighs and calves of hill people in general, and a pleasing expression

of face, not so markedly Mongolian as the countenances of many of the Aracanese; but his follower had the broad flattened features to a much greater degree.

I append a short vocabulary, and a few of the commoner sentences in their language, which has no written character. The dialect is exceedingly guttural, gh being exactly rendered by the Arabic غ and ḳh by the Persian خ while in their vowel sounds *éu* and *ú* have precisely the sounds of the French vowels in *deux*, and *u* in *flute*, &c.

English.	*Heumá.*
A man.	Ché pá.
A woman.	Ché noung.
A boy.	Methá.
A son.	(The same).
A girl, or daughter.	Chenoungtá.
A father.	Eúpá.
A mother.	Oonau.
A chief.	Abéu.
A wife.	Peenoung.
A good man.	Chepá p'há
A bad man.	Chepá p'hachoo *or* p'hawé
My.	Kummá.
Your.	Nummyng.
Large.	Lépee.
Small.	Chotá (!)
A village.	Koo.
A hill.	Kló.
A forest.	Roleẏ.
A stream.	Pevá.
Rain.	Avéu.
Wind.	Klúhhóo.
A dog.	Ú.
A fish.	Nga (as the Burmese ငါး).
A pig.	Vo.
A cock or hen.	Ah.
An elephant.	Múshéy.
A tiger.	Chukóm.
A monkey.	Ayaw.

A bird.	Tuvá.
A snake.	Púrrea.
Hungry.	Manoot'há.
Dead.	Muddéu.
Black.	Avóng.
Red.	Ashé.
White.	Agnó. (The Burmese naso-palatal sound of ၎)
Green.	Amé.
Come along.	Vévau.
Sit down.	Atúgh (ꞓ)
Stand up.	T'haó.
Speak.	Choré.
Don't fear.	Cheekó.
Go along.	T'hé ow.
What is your name?	Numamé ho mo.
Where is?	Kuché ma-aw.
Eat.	Longatee and Loonétee.
Drink.	Niá.
To sleep.	Yé shee.
To lie down.	Moungta shee.
"They say,"—"It is called," "videlicet," &c.	Puttee.

Numerals.

1—Mékhá.	12—Hlé ny.
2—Mé ny.	13—Hlé t'hao, &c.
3—Mé t'hao.	20—Mé kú.
4—Mé pullee.	30—Shaw t'hao.
5—Mé pá.	40—Shaw pullee.
6—Mé churroo.	50—Shaw pa.
7—Mé sharree.	60—Shaw churroo, &c.
8—Mé charia.	100—Yá khá.
9—Mé chuckoo.	200—Yá ny, &c.
10—Mé hrá.	1000—Sho khá.
11—Hlékhá.	

On the Sites of Nikaia and Boukephalon. By Major James Abbott, *Boundary Commissioner, Punjab.*

In a Map of the Punjab of A. D. 1849, dedicated by Arrowsmith to Baron Hügel, which appears to be an edition of that Topographist's former admirable chart disarranged and vitiated by the subsequent blunders of travellers, I observe that the site of Nicæa (meaning of course Alexander's city, Nikaia), is placed upon both banks of the Hydaspes, about a mile and half below Russool.

In another map of the Punjab published by Walker, I observe a site or fort designated Tukht i Sikundur (i. e. Alexander's Throne), about 6 miles S. East of Jelum, on the Eastern bank of the Hydaspes. The latter site caught the eye of one whose authority every soldier must reverence, and led that highly-gifted genius to surmise, that this Tukht i Sikundur marked the crossing of Alexander when invading the dominions of Porus. Finding myself in the neighbourhood of both spots, I have carefully explored the ground and cross-questioned the inhabitants as to their traditions.

The Chuk Sikundur, then, (or, hamlet of Alexander, for Tukht (or, the throne), is a pure invention of the Topographist,) is the ruin of a small mud castle, built by the Sikhs upon the site of a hamlet of that name, about fifty yards long by thirty wide; standing upon the elevated soil at the eastern edge of the basin of the Hydaspes, and distant about two miles from the river. The hamlet received its name from the founder, one Sikundur Khan, a Mogul of Delhi, who about seven generations back came and dwelt there. His descendants still occupy his rights, and are happy to show their mud huts to the traveller, who may have been led thither by the blunders of Topographists. It is called Chuk, or, the hamlet, because subordinate to the main village, Sikundurpoor, standing close to it. The coins procured for me from this site by means of handsome rewards, are all of dates greatly posterior to the Greek dynasties. Thus vanishes for ever the legend of the Tukht i Sikundur.

I have examined most carefully every village and old site upon the eastern bank of the Hydaspes, from old Jelum (Nikaia) to the site lately adopted by Arrowsmith as Nikaia, about a mile and half South

of Russool. In his older and correcter map, when under the guidance of better authority, he placed Nikaia where I believe it to have stood.

In order to consider the arguments for either position, let us first determine the point at which Alexander crossed the Indus. Abisares,* we all know, was king of the mountainous Indies of the Punjaub, i. e. either of Huzara and the mountain tract enclosed by the Indus and Hydaspes, or of that and of the Juppaul and Jumboo mountains. In the latter case, he probably held also Cashmere.

Now, in invading the Assakanoi,† Alexander had to cross the river Gouraios, difficult of passage owing to its depth and current, and the round and slippery boulders in its bed. This river, says Arrian, is called after the people, Gouraioi, of that country. The Gouraioi, called to this day Gour, still dwell upon the Sohaut river, improperly called in some Maps‡ Loondi, and the river to this day bears, as one of several names, the title of Punjgowrá, from a town of that name on its bank inhabited by the Gour tribe. Here we have an undoubted landmark. Again the barbarians escaping from Massaga§ designed to take refuge first in Ora ; but eventually fled to Abisares. Alexander marched to Ora, and then besieged Bazira, and the fugitives from Bazira fled to the rock Aornos,‖ whose roots (see Curtius) the Indus enters.¶ It is manifest therefore, that the river Gouraios, that

* Arrian calls him *τῶν ὀρείων Ἰνδῶν βασιλεύς*. v. 8.

Curtius says: Abisares et Porus erant : sed in Poro eminebat auctoritas. Uterque ultra Hydaspem amnem regnabat. viii. 12.

Strabo says: *Ὑπὲρ δὲ ταύτης ἐν τοῖς ὄρεσιν ἡ τοῦ Ἀβισάρου χώρα, παρ' ᾧ δύο δράκοντας ἀπήγγελλον οἱ παῤ αὐτοῦ πρέσβεις τρέφεσθαι, τὸν μὲν ὀγδοήκοντα πηχῶν, τὸν δὲ τετταράκοντα πρὸς τοῖς ἑκατὸν, ὡς εἴρηκεν Ὀνησίκριτος.* Vol. iii. lib. xv. cap. i. p. 269, Ed. Tauchnitz. Such monsters are wholly unknown in this region at present.

†*Ἦγε δὲ διὰ τῆς Γουραίων χώρας, καὶ τὸν ποταμὸν τὸν ἐπώνυμον τῆς χώρας τὸν Γουραῖον χαλεπῶς διέβη, διὰ βαθύτητά τε καὶ ὅτι ὀξὺς ὁ ῥοῦς ἦν αὐτῷ καὶ οἱ λίθοι στρογγύλοι ἐν τῷ ποταμῷ ὄντες σφαλεροὶ τοῖς ἐπιβαίνουσιν ἐγίγνοντο.* Arrian lib. iv. cap. 25.

‡ This river becomes the Loondi when all the streams are united, that is, after joining the Kabul river ; at Julalabad it is the Nagooman.

§ *Ταῦτα μαθὼν Ἀλέξανδρος, ὥρμηται μὲν ὡς ἐπὶ Βάζιρα· γνοὺς δὲ ὅτι τῶν προσοίκων τινὲς βαρβάρων παριέναι ἐς τὰ Ὥρα τὴν πόλιν λαθόντες μέλλουσι, πρὸς Ἀβισάρου ἐπὶ τῷδε ἐσταλμένοι, ἐπὶ τὰ Ὥρα πρῶτον ἦγε.* ib. lib. iv. cap. 27.

‖ *Ἔφευγον* (i. e. *οἱ ἐν τοῖς Βαζίροις*) *ἐς τὴν πέτραν τὴν ἐν τῇ χώρᾳ, τὴν Ἄορνον καλουμένην.* ib. lib. iv. cap. 28.

¶ Petra non ut pleræque modicis ac mollibus clivi in sublime fastigium crescit,

Ora, Bazira and Abisara are all nearly contiguous one with another, and all near the Indus.

After the capture of Aornos, Alexander entered deeper amongst the mountains to settle the brother of Assakanos,* who had carried thither some troops and many elephants. He then came to the Indus,† and, ordering timber to be felled for boats, went throughout the country included between the Kophenos and Indus.‡ This Kophenos is without doubt the Loondi, for Alexander had not crossed it, but had marched for it from Nikaia, (a town probably near the present Julalabad). This country therefore, is the Eusufzye. Curtius states, that he made seventeen marches§ from Aornos to the Indus, where he crossed. Such a tour, including the attack upon the brother of Assakanos, would bring him to the ordinary crossings at Atuk. Arrian spends some time in questioning whether the Indus was bridged; as the season was summer and the Indus was swollen with melted snow, it assuredly was not bridged.

Now when Alexander crossing the Indus had come to Taxila, the brother and the ambassadors of Abisares waited upon him with tribute.‖ It is therefore manifest, that Taxila is near the Huzara mountains, and somewhere about the parallel of the Eusufzye country.

sed in metæ maxime modum erecta est; cujus ima spatiosiora sunt, altiora in arctius coeunt, summa in acutum cacumen exsurgunt. Radices ejus Indus amnis subit, prærultus utrinque asperis ripis. Q. Cur. lib. viii. par. 11.

* Ἄιρας δ' ἐκ τῆς πέτρας, ἐς τὴν τῶν Ἀσσακανῶν χώραν ἐμβάλλει. Τὸν γὰρ ἀδελφὸν Ἀσσακάνου ἐξηγγέλλετο τούς τε ἐλέφαντας ἔχοντα καὶ τῶν προσχώρων βαρβάρων πολλοὺς ξυμπεφευγέναι ἐς τὰ ταύτης ὄρη. Arrian, lib. iv. cap. 30.

† Αὐτὸς δ' ὡς ἐπὶ τὸν Ἰνδὸν ποταμὸν ἤδη ἦγε, καὶ ἡ στρατιὰ αὐτῷ ᾠδοποιεῖτο πρόσω ἰοῦσα, ἄπορα ἄλλως ὄντα τὰ ταύτῃ χωρία.

Ἐπεὶ δὲ καὶ ὕλῃ ἐργασίμῳ ἐνέτυχε παρὰ τὸν ποταμὸν, καὶ αὖτη ἐκόπη αὐτῷ ὑπὸ τῆς στρατιᾶς, καὶ ναῦς ἐποίησαν, &c. ib. lib. iv. cap. 30.

‡ Ἐν δὲ τῇ χώρᾳ ταύτῃ, ἥν τινα μεταξὺ τοῦ τε Κωφῆνος καὶ τοῦ Ἰνδοῦ ποταμοῦ ἐπῆλθεν Ἀλέξανδρος, ib. lib. v. cap. 1.

§ Inde processit Embolima, &c. Hinc ad flumen Indum sextis decimis castris pervenit. Q. Cur. lib. viii. par. 12. Alexander's first visit to the Indus is not noticed by Curtius, apparently because he had just stated that Aornos was upon that river. Arrian says that he left the rock to go after Assacanus's brother, but finding he had fled to Abisares, leaving the elephants on the Indus, he came to the river.

‖ Ἧκον δ' ἐνταῦθα παρ' αὐτὸν καὶ παρὰ Ἀβισάρου πρέσβεις, τοῦ τῶν ὀρείων Ἰνδῶν βασιλέως, ὅ, τε ἀδελφὸς αὐτοῦ Ἀβισάρου, καὶ ἄλλοι ξὺν αὐτῷ οἱ δοκιμώτατοι. Καὶ παρὰ Δοξάρεως νομάρχου ἄλλοι, δῶρα φέροντες. Arrian, lib. v. cap. viii.

For had Alexander crossed the Indus below Atuk, i. e. at Nitab, Abisares had never troubled his head about him. Yet there are people who, because they find, on the wrong side of the river Indus, the valley Tauk (which they hope to convert into Taxila), would make Alexander drag his army and war-engines during the hot winds over the difficult passes of the Kohaut Mountains, only that he might get the worst roads and the worst ferries and leave behind the most powerful of those whom he came to conquer. The Gamaxus,* mentioned by Curtius, is probably the chief of Ghayb,† a rugged district on the eastern border of the Indus about eighty miles South of Huzara.

Again on hearing of the victory over Porus, Abisares sent to submit himself and kingdom to Alexander. Had this victory taken place at Pind Dadun Khan, it had scarcely threatened the safety of Abisares. It seems therefore almost certain, that Alexander after his passage of the Indus skirted the mountains Huzara and Juppaul.‡ But previous to deciding between the Jelum and Julalpoor routes, we have some other arguments to examine.

After crossing the Indus, Alexander halted at Taxila to refresh his army.§ Of Taxila we only know that it was the largest city‖ between the Indus and Hydaspes, and the capital of Taxiles, one of the two most powerful chiefs of that tract. But since Abisares sent his brother there with tribute, we infer that it was not far from Huzara; that in all probability it was a position menacing Huzara. And we also infer, that it did not border the Indus, because Alexander sent Koinos (Cœnus) *back* from Taxila‖ to the ferry of the Indus, with orders

* Gamaxusque rex exiguæ partis Indorum, qui Barzenti se conjunxerat, vinctus adductus est. Qu. Cur. lib. viii. par 13.

† The present chief of Ghayb was my comrade in the late war.

‡ Strabo says, his course was over the roots of the mountains; agreeing well with the Jelum, but not with the Julalpoor route. The quotation will be found farther on.

§ *Ὡς δὲ διέβη πέραν τοῦ Ἰνδοῦ ποταμοῦ, καὶ ἐνταῦθα αὖ θύει κατὰ νόμον Ἀλέξανδρος· ἄρας δὲ ἀπὸ τοῦ Ἰνδοῦ, ἐς Τάξιλα ἀφίκετο πόλιν μεγάλην καὶ εὐδαίμονα, τὴν μεγίστην τῶν μεταξὺ Ἰνδοῦ τε ποταμοῦ καὶ Ὑδάσπου*, &c. *καὶ ἐνταῦθα αὖ Ἀλέξανδρος ἐν Ταξίλοις θύει ὅσα οἱ νόμος, καὶ ἀγῶνα ποιεῖ γυμνικόν τε καὶ ἱππικόν*, &c. Arrian, lib. v. cap. 8.

‖ *Ταῦτα ὡς ἔγνω Ἀλέξανδρος, Κοῖνον μὲν τὸν Πολεμοκράτους πέμψας ὀπίσω ἐπὶ τὸν Ἰνδὸν ποταμὸν, τὰ πλοῖα ὅσα παρεσκεύαστο αὐτῷ ἐπὶ τοῦ πόρου τοῦ Ἰνδοῦ, ξυντεμόντα κελεύει φέρειν ὡς ἐπὶ τὸν Ὑδάσπην ποταμόν· καὶ ξυνετμήθη τε τὰ πλοῖα*

to break up the boats,—the larger into three pieces, the smaller into two,—and to bring them on carts to the Hydaspes.

Now, had Alexander with the main army reached Tukht Purri,* which some conceive to be Taxila, the danger for Huzara had for the present been past. Moreover that Lower Tukht Purri, which is eighty miles from the Indus, appears to me inconveniently distant from the board of works. I think Hussein Ubdal, the delight of travellers upon that road, thirty miles from the Indus, and, until the last twelve years, the chief town of the Tarkhaili clan, from whom it was wrested by the Sikhs, a more probable locality. For although Taxiles (the Tarkhaili) was one of the two principal chiefs of that Doaba, yet we have no reason to suppose that he was king of Potawar,† an immense tract abounding in warlike inhabitants. Gamaxus, we see, opposed Alexander, although Taxiles had submitted; and I am inclined to think that Taxiles' own territory was bounded Eastward by Chehlo Jungi between Rawul Pindi and Jain ké Sungh.

However that be, there were two routes from either to the Hydaspes for the train of carriages containing Alexander's boats: the shorter to

καὶ ἐκομίσθη αὐτῷ, ὅσα μὲν βραχύτερα, διχῇ διατμηθέντα, αἱ τριακόντοροι δὲ τριχῇ ἐτμήθησαν, καὶ τὰ τμήματα ἐπὶ ζευγῶν διεκομίσθη ἔστε ἐπὶ τὴν ὄχθην τοῦ Ὑδάσπου· κἀκεῖ ξυμπηχθὲν τὸ ναυτικὸν αὖθις δὴ ὁμοῦ ἄφθη ἐν τῷ Ὑδάσπῃ. Αὐτὸς δὲ ἀναλαβὼν ἦν τε δύναμιν ἔχων ἦκεν ἐς Τάξιλα, &c. ib. lib. v. cap. 8.

* Tukht Purri, the stone throne, or, more properly, Turruk Purri, the Hyæna's rock, is a large village built a mile and a half south of the high road and amongst the ravines. Those who would boast its antiquity say that it was founded by a Gukka faquir named Sheikh Gukka, and called Turruk Purri on account of a mischievous hyæna which haunted the spot. Others say it was founded in the reign of the emperor Hoomaioon, about 320 years ago, by Tukht Banou, princess of Sooltaun Audum Gukka, and called after her, Tukht Purri. Purri is a common terminal to towns here. It signifies a slab of rock. Turruk Purri has no appearance of antiquity, nor do its most enthusiastic admirers claim for it an origin anterior to the invasion of Mahmood Ghuznavi. Its position is unfavorable to commerce; lying off the main road and amongst impracticable ravines. To suppose these ravines formed since the erection of the city, is to suppose the city built previous to the existence there of the water, upon which it is dependent; that water rising in one of the ravines. Two thousand years is a long period in the estimation of man; but absolutely nothing as regards the face of nature, in which it produces no visible wrinkle.

† Arrian calls Taxiles the Hyparch of Taxila; and Curtius, speaking of Porus and Abisares says, Sed in Poro eminebat auctoritas.

the present town of Jelum, the longer to the modern village of Julalpoor. Upon one of these places he must have debouched from the table-land of Potawar. Each had its ferry. But between the ferries there is no comparison; that of Jelum being infinitely more convenient and only one-third the width of the Julalpoor ferry.

Let us, however, suppose that he carried his pontoon train twenty needless miles by Julalpoor, and chose to encounter rather than shun the quicksands of the torrent Hurrund, which at that season (the monsoon) are a serious impediment to beasts of burthen and wheel carriages. On arriving he would have found Porus encamped upon the eastern bank of the Hydaspes; near the present village Duttoo Choor. It was the height of the monsoon, and Alexander there found the Hydaspes four stadia or 833 yards, i. e. half a mile in breadth, according to Curtius.* But I measured it even in February, after a fall of rain, immediately above that point, one half mile in breadth, and during the monsoon it is considerably more. Curtius† also says, it was thickly studded with islands, to which the youth of either army swam to skirmish. But at present, during the monsoon, there is not an island there. At Julalpoor the salt range comes down almost to the water's brink, and this is the case to the distance of eight miles higher up, affording Alexander such a bird's eye view of the whole river, as had made it impossible for him to mistake an island for the main land. Neither Arrian nor Curtius indicates the flank to which Alexander's movement was made. But although several travellers have supposed that it was to his left flank, none has hitherto imagined it might have been to his right flank. Let us therefore examine the ground to his left flank: that is, further up the stream. So far as I can judge, it seems probable that the river there approached to contact with the mountain spur at Murriali and at Julalpoor. It will be seen by the sketch map accompanying (which is not constructed from a regular survey) that it has receded to the East, and left a slip of Kándá land varying from 400 yards to a mile. Now if we measure eleven miles from Julalpoor in this direction, i. e. up the stream, it

* Quatuor in latitudinem stadia diffusum profundo alveo et nusquam vada aperiente, speciem vasti maris fecerat.—Qu. Cur. lib. viii. cap. 13.

† Erant in medio amne insulæ crebræ, in quas Indi et Macedones nantes, levatis super capita armis, transibant. ib.

brings us to about Darapoor, where there is a ferry. Darapoor, an insignificant village, stands upon an old but small site, apparently that of a village, and is said to have been built about 150 years ago by one Dara Khan. The name signifies the town or village of Darius. Opposite is Russool upon a very lofty cliff, beneath which in the monsoon a branch of the river flows. This cliff scarps to the West that rising ground, the last glacis of a long ridge of Kunka* and clay of small altitude which runs in a curvilinear figure from Bhinleur, and has at some remote period, joined the salt formation westward of the Hydaspes, ere severed by that river. It runs nearly South from Russool to the distance of two miles, melting there into the plain; from which rises the isolated lofty mound of Moongh, a considerable village. During the monsoon, immediately below the cliff of Russool, rolls the Hydaspes; but farther South, Kanda land interposes, i. e. land subject to inundation, and utterly unfitted for the manœuvres of chariots or even of cavalry. The bed of the Hydaspes being here a shifting sand, it is impossible to conjecture what might have been its figure two thousand years ago, islands are constantly forming and disappearing. But the character of the cliffs and heights of Russool is so remarkable, that it could scarcely have escaped the minute detail of Arrian's description. Nor does it seem probable that such a master of strategie as Alexander, should have selected a landing place immediately below a cliff and height, where a hundred of the enemy could have set at defiance his whole array. Still less is it probable that with such a bird's eye view of the river as is afforded by the mountains on Alexander's side, that great captain could have mistaken an island for the shore. Moreover, the cliff at Russool is so lofty that the whole river lies beneath an eye stationed there. No island or series of islands on the further side could have masked Alexander's preparations from the scouts of Porus. On landing, he would have found himself beneath a cliff, crested with armed men. The great breadth of the river there, admits of a boat crossing but twice between daybreak and night. To have landed fourteen thousand men, one-third cavalry, would have required an absolute fleet of boats and rafts.†

* Kunka is granulated Tufa, deposited by rain water in soaking through alternate strata of marl and clay.

† Suppose that upon one raft of skins fifteen cavalry could be crossed. Then

These boats were conveyed on carts to the spot and hidden behind the island nearest shore. The rafts were hidden in the bushes. But they must have been launched at least a day or two previous to the embarkation in order to prove their capacity for the enterprize. This could not have been done at Darapoor, without giving the alarm at Russool.

We have yet to examine a circumstance which has led several to think the crossing must have been in this neighbourhood. Curtius has stated that in crossing the tremendous torrent of the Hydaspes, the waters, beaten back,* betrayed the existence of hidden rocks: in many places, he adds, further on,† but *one* boat was wrecked, being driven by the current against a rock. Now although I think that Quintus Curtius's history is generally faithful; yet there are proofs sufficient that he occasionally dealt in poetical embellishment of facts. This is seen in his episode of Alexander and Charus at the storming of Aornos, and in the fine speeches which he puts into the mouths of his heroes. Any person gazing upon the torrent of the Hydaspes, during the monsoon or previously, must have been struck with the sight of these "undæ repercussæ," this boiliug up of the waters, as if hurled back from sunken rocks. Nevertheless, there are no rocks below Luhri. There are none at Darapoor nor at Julalpoor, although the mountain almost dips its foot into the wave. The reason of this seems to be that the sandstone is so soft and friable, that it melts into sand under the influence of air and water. Arrian is quite silent about the rocks. The inference is that none existed then, any more than now. A boat may have been lost against the hard solid bank of the island, as well as if it had been rock. The current is so violent at that season, that a boat with fifty or sixty men in it, is easily smashed against any obstruction less soft than water. As the boiling

4500 cavalry would require 300 rafts. And if one boat would take 50 infantry, 190 boats would be required for 9500; giving a total of 490 floats. Where could they have been concealed from a scout on the high cliff of Russool.

* Nec pro spatio aquarum late stagnantium impetum coercebat; sed quasi in arctum coeuntibus ripis, torrens, et elisus ferebatur; occultaque saxa inesse ostendebant pluribus locis undæ repercussæ.—Q. Cur. lib. viii. cap. 13.

† Una ergo navi, quam petræ fluctus illiserat, hærente, cæteræ evadunt, id. lib. viii. cap. 13. The word "hærente," here used, savors rather of a bank or sboal than of a mass of stone properly termed rock.

of the waters exactly imitates their action over sunken rocks; so would any of the solid banks near Bhoona represent the power of a rock to the hapless boat dashed against it. It must also be remembered, that at Bhoona, where I suppose the crossing to have been made, the bottom is a pavement of large boulders, firmly cemented together. Above this originally lay shingle of smaller sizes, to the depth of several feet, now carried away from the channel, but still appearing in the islands and often forming solid shoals, quite as dangerous as rocks. Occasionally masses of this shingle become disjected from the shore and form, for months, huge, rock-like cubes; until gradually their cement is dissolved by the elements. Thus, it will be seen that Curtius's expressions will apply better to the Hydaspes above Jelum, than to that river above Julalpoor. The "insulæ crebræ," if they ever existed at the latter spot, are no more to be seen. It is impossible for any one looking on the river there, with Arrian and Curtius before him, to imagine he contemplates the scene described by either.

Let us next refer to the landing. On accomplishing this, we have no mention of Alexander finding the corps of observation sent against him, posted on a height from which it was necessary to dislodge them. On the contrary he dashes* at them with his cavalry. But at Russool the Kándá (or inundated land) will not admit of cavalry movements, and no cavalry can charge up cliffs and rugged ravines.† Porus, too, marched, *until* he found himself upon soil firm enough to admit of cavalry evolutions. This could not have been the Kandá; he must needs have been upon the sandy soil above it, in which case Alexander had so decidedly the advantage of ground that it is wonderful that Arrian has not noticed it. The chariots of Porus‡ according to Arrian, were encumbered in the mud; according to Curtius, they were

* Ὡς δὲ κατέμαθεν ἀτρεκῶς τὸ πλῆθος τὸ τῶν Ἰνδῶν, ἐνταῦθα δὴ ὀξέως ἐπιπεσεῖν αὐτοῖς ξὺν τῇ ἀμφ' αὐτὸν ἵππῳ. Arrian lib. v. cap. 15.

† Ὡς δ' ἐνέτυχε χωρίῳ ἵνα οὐ πηλὸς αὐτῷ ἐφαίνετω, ἀλλ' ὑπὸ ψάμμου γὰρ ξύμπαν ἦν ἄπεδον καὶ στερεὸν ἐς τὰς ἐφόδους τε καὶ ἀναστροφὰς τῶν ἵππων, ἐνταῦθα ἔτασσε τὴν στρατιάν. id.

‡ Τὰ δὲ ἅρματα αὐτοῖς ἵπποις ἁλῶναι, ἔντε τῇ ἀποχωρήσει βαρέα γενόμενα, καὶ ἐν αὐτῷ τῷ ἔργῳ ὑπὸ πηλοῦ ἀχρεῖα. id.

Gravesque et propemodum immobiles currus illuvie et voraginibus hærebant. ..... Aliorum turbati equi non in voragines modo lacunasque, sed etiam in amnem præcipitavere curricula. Q. Cur. lib. viii. cap. 14.

swamped in quicksands. But, as already observed, the Kándá land could not have been the battle field ; no charioteer would have ventured upon it. And as for the high plain above the cliffs, the soil being sand, bound together by grass, becomes the firmer for saturation ; so that here again the features disagree. What, then is the evidence that Alexander crossed the Hydaspes at the Russool ferry? Mr. Williams's argument is that Strabo* has said : The Macedonians marched to the Hydaspes from the Indus in a southern direction. But from the Indus, there is no carriage road south, nor is Julalpoor south of Atuk, though both Jelum and Julalpoor lie from thence very many degrees south of east.

Burnes says, "It has been conjectured that Julalpoor is the scene of Alexander's battle with Porus, &c. There is much to favor the opinion ; for, in the words of Curtius, we have islands in the stream, projecting banks and waters dilated, yet the mention of sunken rocks seems to point higher up the river, near the village Jelum. The high roads from the Indus pass this river at two places, at Julalpoor and at Jelum : but the *latter* is the great road from Tartary, and appears to have been the one followed by Alexander. The rocky nature of its banks and bed here assists us in identifying the localities of the route, since the course of the river is not liable to fluctuation. At Jelum the river is also divided into five or six channels, and fordable at all times excepting in the monsoon.

* Since writing the above I have received a copy of Strabo. His words are Ἡ μὲν οὖν μέχρι τοῦ Ὑδάσπου ὁδὸς τὸ πλέον ἦν ἐπὶ μεσημβρίαν· ἡ δ'ἐνθένδε πρὸς ἕω μᾶλλον μέχρι τοῦ Ὑπάνιος· ἅπασα δὲ τῆς ὑπωρείας μᾶλλον ἢ τῶν πεδίων ἐχομένη. Strabo, lib. xv. p. 700, c. This has been somewhat inaccurately quoted by the author of the best popular Life of Alexander, in the Family Library, who says, "We are informed by Strabo that the Macedonians marched in a Southern direction from the bridge across the Indus to the Hydaspes. As there can be no doubt that the bridge was built in the vicinity of Attok, we may be almost certain that the advance of the army was along the main road from Attok to Jellickpore [Julalpoor, perhaps he means,] on the Hydaspes." Ch. xiii. par. 6. But Strabo, in this passage, says nothing of a bridge, and he qualifies the word μεσημβρίαν by the comparative πλέον. He adds, they passed rather over the roots of the mountains than through the plains. This is precisely a description of the route from Attok to Jelum. There is no carriage road from Attok, or the Indus near Attok, to the South. Nor is Julalpoor South of Attok, but both Jelum and Julalpoor lie South of East of Attok.

"About fifteen miles below Jelum, and about 1000 yards from the Hydaspes, near the modern village of Darapoor, we hit upon some extensive ruins called Oodeenuggur, which seem to have been a city that extended three or four miles. The traditions of the people are vague and unsatisfactory, for they referred us to the deluge and the time of the prophet Noah. Many copper coins are found, but those which were brought me bore Arabic inscriptions, &c. Genl. Court found a fluted pillar *near* this site, with a capital very like the Corinthian order. It however had a Hindu figure upon it. At present there are no buildings standing, but the ground is strewn with broken pieces of kiln-burnt bricks and pottery, the latter of a superior description. On the opposite side of the Hydaspes to Darapoor stands a mound said to be coeval with Oodeenuggur, where the village of Moongh is built, at which I procured two Sanskrit coins. There are also some extensive ruins beyond Moongh near Huria Badshapoor. I do not conceive it improbable that Oodeenuggur may represent the cite of Nicæa, and that the mounds and ruins on the Western bank mark the position of Bucephalia."

So far Burnes. I did not hear of the ruin of Oodeenuggur when in the neighbourhood, or should have visited it. Burnes rates it at fifteen miles below Jelum. But Darapoor is nineteen and half miles, as the crow flies, or, by the road, about twenty-four miles. If therefore it be Nikaia or Boukephala, Alexander's camp must have been at Julalpoor, which Burnes had just before proved to be improbable. Alexander's flank movement according to Arrian was a hundred and fifty stadia or about eleven miles.

Again, the foregoing extract would lead any one to suppose Moongh opposite to Darapoor or Oodeenuggur. But Moongh is in fact seven miles below Darapoor. And the only argument Burnes could himself observe for the Grecian origin of either was, that Oodeenuggur yielded *Arabic* coins and inscriptions, and Moongh two *Sanskrit* coins. Genl. Court, however, found a fluted pillar with a Hindu figure in relief near Oodeenuggur. And therefore it is probable that it was inhabited previous to the extinction of the Scytho-Greek architecture which seems to have lasted till the invasion of Mahmood Ghuznavi. Oodeenuggur and Moongh, both very old Hindi names, are probably antecedent to Alexander's invasion, and give not the slightest hint of having succeeded to older Greek titles.

With regard to the resemblance which Burnes supposed between the Hydaspes at Julalpoor and Curtius's description, it seems to have arisen from Burnes trusting too much to memory. Curtius no where says that the Hydaspes opposite Alexander's camp showed "projecting banks and waters dilated." On the contrary he says, "Nec pro spatio aquarum late stagnantium impetum coercebat; sed quasi in arctum coeuntibus ripis, torrens, et elisus ferebatur." "Nor did it curb its impetus on account of that spread of waters widely overflowing, but as if compressed by the rushing together of the banks, roaring and strangled it was hurried past." As to islands, Curtius says not that there were islands, but that the stream was thick sown with islands; which is certainly not the case near Darapoor or Julalpoor.

As for the site below Russool, called Gunja, it does not yield a brick or a building stone or a Greek coin to research. A space about five hundred yards in length by seventy wide is marked with fragments of pottery, and therefore in all probability has been a village site. But it is not in the slightest degree elevated above the soil, like all old sites in India, and the potsherds do not penetrate below a depth of two feet. A mud village may have been here, but could not have existed above one or at most three generations, or the accumulation of soil would be manifest. The Sikh trench of circumvallation made after the battle of Chillianwala has ploughed this site up throughout its length and exhibited its contents. The natives call it Gunja, or, the market: they have no tradition regarding it.

Why then, is this Nikaia? the city that was built to mark the greatest and most memorable of Alexander's exploits. Was Alexander, —the shrewdest king that ever played the paltry game of conquest,— was he the man to found a city which was to bear the memory of his greatest victory to remote ages, upon an obscure site, off the road of commerce, and not even opposite to a ford or ferry? in the certainty that it could never be more than a village and that neither traveller nor merchant would visit it? If the crossing was at Russool, then Nikaia is Moongh, and Julalpoor is Boukephala. A few words therefore may be devoted to each.

Moongh is a large village on the eastern bank of the Hydaspes, and about two miles from the stream. It is sited upon a very high mound, which appears to me partly natural, partly an accumulation of

rubbish. So far as I can learn, Greek bricks are not found there, and few, if any, Bactro-Greek coins. Tradition is silent regarding it. Julalpoor is a large modern village, built about sixty years ago by Rájá Jullal Khan, whose descendants still live in the neighbourhood. It stands upon a spur from the salt range. The original town stood upon the mountain at the distance of a mile from Julalpoor, in a very strong and rugged position. It was about a quarter of a mile in length by a hundred and fifty yards in breadth, built of undressed stone cemented with mud; in short, a collection of rude huts. It was called Girjauk, was inhabited by the Rajpootra tribe of Junnooi, and was attacked and destroyed seventy years ago by Sirdar Chirt Singh, grandfather of Runjeet Singh. I carefully explored the ruins without discovering a single stone bearing the marks of the chisel. No Greek or Bactro-Greek coins are found there. If therefore it be Boukephala all traces of the identity are lost. Yet it is very certain, that if Alexander crossed at Russool, this must have been Boukephala. He halted and celebrated the obsequies of the fallen opposite the crossing;* but he of course built the cities where they would remain such, and not mere congregations of obscure huts.

It may be asked, might not Alexander have crossed the Hydaspes eleven miles below Julalpore? Upon this question, I am not prepared to enter fully. I can hear of no circumstance to warrant the supposition. The river there is of great breadth, rather more than one and a half miles during the monsoon, and as we have no evidence of Greek sites either there or at Julalpoor and Moongh, I do not think it will be very readily advocated.

May not then the crossing have been eleven miles below Jelum? In this there is no impossibility: but we know not a single argument in favour of it. The river bed being there soft sand, it is impossible to calculate the aspect of the river two thousand years back, as every

* Ἵνα δὲ ἡ μάχη ξυνέβη, καὶ ἔνθεν ὁρμηθεὶς ἐπέρασε τὸν Ὑδάσπην ποταμὸν, πόλεις ἔκτισεν Ἀλέξανδρος· καὶ τὴν μὲν, Νίκαιαν, τῆς νίκης τῆς κατ' Ἰνδῶν ἐπώνυμον ὠνόμασε· τὴν δὲ, Βουκεφάλαν, ἐς τοῦ ἵππου Βουκεφάλου τὴν μνήμην, ὃς ἀπέθανεν αὐτοῦ, &c. Ἀλέξανδρος δὲ ἐπειδὴ οἱ ἀποθανόντες ἐν τῇ μάχῃ κεκόσμηντο τῷ πρέποντι κόσμῳ, ὁ δὲ τοῖς θεοῖς τὰ νομιζόμενα ἐπινίκια ἔθυε, καὶ ἀγὼν ἐποιεῖτο αὐτῷ γυμνικὸς καὶ ἱππικὸς αὐτοῦ ἐπὶ τῇ ὄχθῃ τοῦ Ὑδάσπου, ἵνα περ τὸ πρῶτον διέβη ἅμα τῷ στρατῷ. Arrian v. 19 and 20.

year alters it. Koharr is an old site, but I could there procure neither Greek coins nor any intelligence of sculpture or of Greek bricks being turned up. There is one large inhabited island opposite Koharr, but it seems to me of recent formation, and to have been, not a hundred years ago, one with the shore. Supposing it to have been divided from Koharr by a small creek, it would answer very well for the second or larger island encountered by Alexander. The "insulæ crebræ," however, if they existed here, are no longer found. It seems to me, that Alexander having the choice of flanks to move upon, could not have hesitated for a moment to prefer making his passage to the left: for there, between him and the opposite shore, intervened extensive and well wooded islands; and the deep narrow channels between them afforded a mask to his fleet, so that its increase or diminution could not be perceived by the enemy. Moreover, by reference to the map in the No. of this Journal for December, 1848, it will be seen, that in order to oppose Alexander by that passage, Porus had to march nineteen miles. Whereas by this passage he would have marched but ten miles. The figure of the river and its islands to the north of Jelum agrees exactly with Arrian's and Curtius's description. Here are the inhabited and uninhabited,* the wooded and the naked islands in which the youth of either force met to skirmish. There is the promontory (Bhoona), round which the current circles in a remarkable manner, and from which to this day cattle take their plunge to reach the small jungle-clad island in mid-stream: the set of the current from thence being directly on that island. There is the larger island five and half miles in length and uninhabited, with its invisible eastern channel, fordable even during the monsoon, having a firm pavement of stones. Here is the firm plain beyond the river, hard and solid

* Ἄκρα ἦν ἀνέχουσα τῆς ὄχθης τοῦ Ὑδάσπου, ἵνα ἐπέκαμπτεν ὁ ποταμὸς λόγου ἀξίως· αὐτὴ τε δασεῖα παντοίων δένδρων εἶδει, καὶ κατ' αὐτὴν νῆσος ἐν τῷ ποταμῷ ὑλώδης τε καὶ ἀστιβὴς ὑπ' ἐρημίας. Arrian, lib. v. cap. 11.

Erant in medio amne insulæ crebræ, in quas Indi et Macedones nantes, levatis super capita armis, transibant..... Erat insula in flumine amplior cæteris, silvestris eadem, et tegendis insidiis apta. Q. Cur. lib. viii. cap. 13. We have only to read on to feel assured of Curtius's ignorance of military strategie, for he evidently supposes that Alexander drew the attention of Porus to the island by which he meant to effect his passage, and that the passage was effected in front of both camps.

after rain, where not ploughed; but obstructing, where ploughed, the motion of the chariots. There, in rear of Porus, are the quicksands in the wide shallow bed of the Sookaytur, in which, according to Curtius, the chariots were swamped: and here is a river of moderate breadth, which Alexander's entire force might have crossed in the course of eight hours: and, in the curvature of the river, there favourable to Alexander but otherwise to Porus, we see how Alexander's fear of finding the phalanx of elephants of Porus arrayed upon the hostile bank to oppose his cavalry, was disappointed.

But is it objected that the constant wear of a river's banks, must in the course of 2200 years have obliterated all traces of its previous configuration? I answer, that I have well considered this question: that I have carefully compared my own observation of alterations in the banks with the yearly alterations described by the inhabitants of that portion of the Hydaspes.

But in order to do justice to this question it is necessary to go back to remote ages, when the Hydaspes or the Kishengunga first escaped from the mountain-walled basin which held its waters as a tranquil lake.*

Imagine, then, an immense inland sea occupying the entire valley of Cashmere up to the roots of the mountains around. Imagine some unusual planetary conjunction drawing together the clouds in one of those deluges of rain, of which we have an instance in the Flood of Moray. The waters of the sea of Cashmere† are elevated far above their ancient level, until they actually begin to overflow in the lowest of the passes—the Buramoola. The instant the smallest runnel has found an escape, the sea puts forth its whole strength upon that point. Every moment, every hour, the channel is enlarged, the torrent is aggrandized. The mountain is cleft from shoulder to base as by the axe of a Titan, and through the narrow sky-walled rift formed by the meeting of precipitous mountains, there pours a deluge, compared with which Niagara were an infant. This deluge holds on its course till again impeded by a mountain barrier. Behind this, it rapidly

* All mountain rivers that I have examined afford evidence of having been originally lakes. The Indus which cleaves a snowy barrier, N. East of Chilas—the Jelum—the Ravi—and, probably, the Sutlej.

† This escape of the sea of Cashmere is recorded by tradition.

accumulates its forces: but the instant a runnel has surmounted the pass, the whole is again in motion, urging all its might upon the point; cleaving, melting, rending, overthrowing, until once again the tremendous chaos of water, forest, mud, and the bodies of men and beasts, is hurled forward with portentous impetus, through the narrow gorge upon the deep soil of the yet scarcely furrowed valley. So long as the course of this torrent lies between mountains, the walls of living rock prevent its spread and hold it to the depth perhaps of three or four hundred feet. But as it issues forth upon the nearly level valley with astonishing velocity it spreads out on either side, widening as it goes, licking up the clay and finer particles of sand, to hurry them with its waters to the ocean. Thus is abraded all the superficial soil to the depth perhaps of two hundred feet, and thus is formed the river basin, properly so called, to the breadth at Koharr of three or four miles. But now the reservoir of waters is somewhat exhausted. The supply is reduced to the daily tribute paid to the Hydaspes by the mountain spring. The course of the river between the mountains is that of a deep and rapid mountain stream but as it emerges into the basin recently delved for it in the open valley where the differences of level are not very abrupt; the velocity of its waters causes their deflection into many separate currents, as grape-shot spreads on losing the constraint of the gun: or as a stream of water poured from a height is split into rain ere it reach the earth, by the opposition of the atmospheric medium. And thus are formed many islands; some at once, before the channel has been worn very deep, others subsequently, when the surface of the channel has been still further abraded. The former are on a level with the river banks on either side: have deep firm clay soil and a stratification corresponding with that of the banks; they bear crops, have often villages, and are easily mistaken for the further bank of the river. The latter are much lower than the river banks, and emerge only because the channels have sunk around them. They have been wholly despoiled of their clay soil and only shingle and sand remain to them: the latter sometimes original, sometimes the deposit of inundations. These islands often bear the tamarisk: but as they are more or less subject to inundation, permanent houses are not erected there. As the river proceeds, it receives the tribute of the plains; it finds a basin growing more and

more level, a depth of soil, which cannot be fathomed, it spreads out into a wide sheet of water forming islands, indeed, but islands which almost as soon as they are formed begin to melt away in the set of the yearly inundation, which, having no rocks nor channels of shingle to determine its current, takes a different course every year, shifting* from side to side of the extensive basin. The action of the wind upon so wide a surface of fine sand, aids this caprice of the current. The waters find their channel of last year obstructed by sand, and put forth their strength in a new direction washing away the islands of last year and depositing sand-banks, which every year rise by the deposit of silt until they become islands: but which are always subject to overflow or even dissolution in heavy floods. Sometimes indeed when the river comes down with unwonted power and finds the old channels obstructed or grown very devious, it sweeps onward over the country and receives an entirely new chaunel in a directer line, isolating a portion of the country so large that it continues to be an island for centuries and is inhabited and cultivated. Such islands however are rare in the Hydaspes below Jelum. I know of only two or three. They may, when very extensive, be mistaken for the opposite bank of the river by a person who cannot command a bird's eye view of the stream. But the other kind never can be thus mistaken.

Let us once more return to the river channels on the escape of the Hydaspes from the mountains. These every year sink in depth, until they have cut through the strata of finer shingle and penetrated to the pavement of massive and firmly cemented boulders which no ordinary torrent can move. There the furrowing action of the current is arrested, and the figure of the channels is preserved, by the solidity of the scarps, and the only change that can ordinarily happen to them in the lapse of ages is the gradual and yearly wear of the banks at the salient curvatures, and the consequeut decrease in the depth of the stream. If indeed such a terrible inundation as that which occurred to the Indus about twelve years ago should happen to the Hydaspes, the soil of the higher islands would of course be swept away and they would become like the secondary islands, shoals of shiugle, strewed with sand, and remain so for ever; there being at

* In the river Sardeh I have known these aberrations amount to eight miles or more.

this place almost no deposit of clay from the waters of the Hydaspes. But that such a prodigy has never happened to the Hydaspes since first these islands were formed is sufficiently manifested by their strata.

The Hydaspes has been deflected from the natural level of the country which fall from N. E. to S. West at right angles with the Pir Punjab, by the thrust of the rock south of Mungla; which has turned it somewhat uphill toward the east. Of course the aggregate efforts of the river for centuries will be to find the natural level of its stony pavement, to enlarge its Western channel by wearing the right bank of that channel and to abandon gradually the Eastern channel. Therefore to calculate the effect upon the channels of the Hydaspes of 2200 years of these efforts, let us take a single year and suppose that in that period, the banks are wasted in twenty-four places, to an average depth of four yards and an aggregate length of 600 yards: in the space intervening between Mungla and Jelum equal to twenty-four miles. In the course of 2200 years this wastage dispersed over that extent of channel will have increased its average breadth of 800 yards to 813 yards. So that supposing no deluge to have happened to the Hydaspes in that period, the channel will be now thirteen yards wider than at the passage of Alexander. It is certain that were the wear three or four times as great as here assumed, it would not materially alter the features of the river.

We have yet to examine the old sites upon the Hydaspes at and opposite the modern town of Jelum, which I suppose to be Boukephala and, though less certainly, Nikaia. The first evidence Alexander gave of his great and dominant energy and of his practical judgment was in taming the wild horse Boukephalas.* It became an important part of his history and all his great deeds were performed from the back of Boukephalas. Can it be wondered that the death of his old and tried companion should powerfully affect Alexander, who though the wisest and most politic of all conquerors, was impelled not by the love of acquisition, but the thirst of renown, imbibed by him in his

* Βουκεφάλας, ὃς ἀπέθανεν αὐτοῦ, οὐ βληθεὶς πρὸς οὐδενὸς, ἀλλ' ὑπὸ καύματός τε καὶ ἡλικίας· ἦν γὰρ ἀμφὶ τὰ τριάκοντα ἔτη, καματηρὸς γενόμενος, πολλὰ δὲ πρόσθεν ξυγκαμών τε καὶ συγκινδυνεύσας Ἀλεξάνδρῳ, ἀναβαινόμενός τε πρὸς μόνου Ἀλεξάνδρου ὁ Βουκεφάλας οὗτος, ὅτι τοὺς ἄλλους πάντας ἀπηξίου ἀμβάτας, καὶ μεγέθει μέγας, καὶ τῷ θυμῷ γενναῖος. Arrian, v. 19.

study of Homer. Even to this day there is no circumstance connected with the history of Alexander which so powerfully affects the imagination and interests the affections, as this bond of sympathy between the conqueror and the steed which would yield to none but him. A city was built to mark the neighbourhood in which his horse had died. That city marked also the zenith of Alexander's fortunes. From that point all is downhill in his career. Toil encountered without motive and without reward. A rebellious army: vast tracts won, *but* to be lost. Deserts traversed, too miserable to be retained. Hunger and thirst endured, blood spilt and wounds received in petty conflicts which added nothing to the lustre of his renown: and finally his untimely death, at feud with his Macedonians, and far away from his native land.

The first cities of Boukephala and Nikaia* had been injured by the rain. The Rev. J. Williams, author of a life of Alexander, says, that the injury was received from the rise of the Hydaspes, but does not state his authority. He may not be aware that a heavy fall of rain will wholly dissolve a new Indian city built of clay or not unfrequently of marl. The present Jelum however, is occasionally flooded and injured by the rise of the Hydaspes. About 400 yards from the river's brink, and due West of the present Jelum, is an elevated mound about as extensive as the present towu, but running East and West. It is wholly composed of the rubbish of decayed or ruined buildings and Jelum has been built of the old Grecian bricks dug from this site. It is also full of Greek and Bactro-Greek coins. General Ventura ran some shafts into it aud dug out au architrave of free-stone, of Grecian sculpture, of which a sketch was sent to this Jourual. Another and very beautiful fragment of the same ruin, (a temple, perhaps, to Ceres,) is to be seen at Kálá, a small town about three miles from Jelum. It is a sculptured free-stone column of what I have termed the Indo-Ionic order.† I also dug up one or two

* Καὶ τὸν Ἀκεσίνην διαβὰς, ἐπὶ τὸν Ὑδάσπην ἦκεν, ἵνα καὶ τῶν πόλεων, τῆς τε Νικαίας καὶ τῶν Βουκεφάλων, ὅσα πρὸς τῶν ὄμβρων πεπονηκότα ἦν, ξὺν τῇ στρατιᾷ ἐπεσκεύασε. v. 29.

Neither Curtius, nor Strabo, nor Pliny, nor Plutarch gives any hint of the injury having been received from the river.

† See the No. of this work for February, 1849.

fragments of sculptured stone from the same spot, and sent them to Lahore in progress to the Asiatic Society's Museum. This seems to have been the Boukephala of history. Nothing is known of its name or fortunes by the natives of the country, excepting that it is not the old Jelum. They call it, in common with a hundred other sites of which the name is lost, Pindi, or the town.

The old site on the eastern bank of the Hydaspes is far less elevated than that just described. The artificial accumulation of soil is not above twelve or thirteen feet. It is called old Jelum and that is undoubtedly the name it bore previous to its destruction; as the lands belonging to the site, bear that name, as does the modern village erected there. I found many shafts (now filled up) which Genl. Ventura sank some years ago. The inhabitants say, he found a few large, i. e. Greek, bricks, some smaller bricks, and a few pice. I also sunk a shaft and found, first, earth and potter's clay, then a few small bricks, which seem to have been introduced by the Muhammedans; and then one or two larger bricks. The coins brought me were few, and generally either Hindu or of the later Bactro-Greek dynasties. It stands close to the easternmost small channel of the Hydaspes, on a low plain, or rather valley, and must, I think, have been liable to occasional injury from floods. Its length is about 400 yards and breadth about 100. It would appear to me to have been originally a Greek town, and subsequently Hindu or Muhammedan, but not to have existed so long as Boukephala and to have had no great importance as a Greek town.

Supposing it to be the Nikaia sought, reasons for this are easily found. The Greek empire every now and then extended itself beyond the Hydaspes. But that river was generally its utmost Eastern limit: by the great scarcity of Greek coins Eastward of the Hydaspes, and their great abundance Westward. Moreover upon a road of no very considerable commerce, it required the direct interference of a despotic government to maintain the prosperity of two considerable towns, in such close contact. The site of Boukephala being higher, drier, healthier, and nearer the ferry than that of Nikaia, the latter would gradually languish; the more especially as Greek subjects would feel more secure on the Western side of the Hydaspes.

I think it probable that Boukephala existed at least to the invasion

of Mahmood of Ghuzni, and was then, with hundreds of other towns, overthrown; and its name (which must have sounded idolatrous to that righteous monster) blotted out. The existence in it of an idol temple (the temple before alluded to) would have sufficed to seal its condemnation.

But the site is too important to be many years neglected, and hence the town of Jelum may have arisen on the site of Nikaia, and this being afterwards destroyed or found inconvenient by the inhabitants, may have led to the erection of the modern town of that name close to the site and built of the bricks of the ruined Boukephala. This town, whatever its origin, has changed the name of the Hydaspes from V'dusta to Jelum; and it may be a question whether it be, as generally supposed, a Persian word, or a corruption of the Greek word ζῆλον pomp, or σῦλον spoils—the place where the booty of Porus was divided.

But for the existence of an old Greek site at old Jelum, I should have supposed that Nikaia had been where Sookchynepoor now stands, and that it was one town of several which have there been destroyed by the encroachments of the Hydaspes. But there is no tradition of the name of the towns thus carried away, which can aid in throwing light upon the question. The site of Sookchynepoor is peculiarly happy, and must have been I think almost upon the battle-field, or at least in sight of it. If Sookchynepoor be Nikaia, the old Jelum is probably a Greek town with a Grecian name.

If then my arguments have not been in vain, I have shown—

1st. That Alexander must have skirted the mountains of Huzara, the realm of Abisares, after his passage of the Indus.

2nd. That the probabilities are in favour of his having followed the Jelum route to the Hydaspes.

The word Jylum is derivable from Sunscrit: viz. Jy, victory—lim, house,—the habitation or abode of victory; which is just a translation of the Greek name Nikaia. The position of Sookchynepoor as the site of Nikaia is for many reasons preferable to that of old Jelum. But unfortunately there is no tradition that can assist us in fixing it with certainty, and the site of the town which preceded Sookchynepoor has been wholly swept away by the river.

3rd. That the probabilities are strongly in favour of his flank

movement to cross the Hydaspes having been to the left rather than to the right.

4th. That the features of the ground and of the river eleven miles above Julalpoor do in no wise agree with Arrian's minute description.

5th. That the features of the ground and of the river eleven miles above the Jelum ferry tally with Arrian's and Curtius's descriptions in every particular: for which compare the accounts of those authors with my map of the Hydaspes in the number of this Journal for Dec. 1848.

6th. That the site of Nikaia in Arrowsmith's map of 1849 is laid down upon insufficient authority, and has never been the site of a city, nor could ever have been selected as such by Alexander.

7th. That we must look for traces of Nikaia and Boukephala upon the main road or near some important ferry: not in obscure corners, where they could have had no existence as cities, or where, if existent, they must have been unknown.

Is it a mere flight of fancy, or do I really trace this Anabasis in the names of the villages which mark the course of the invader? The question is curious, and if the reader will refer to the map of the Jelum so often quoted, he may in five minutes be, if not edified, at least amused.

I have in that map placed the camp of Alexander opposite the present Jelum. But as Alexander could not at that time use the ferry, it is not improbable that his camp may have been higher up the stream where the islands commence. Quintus Curtius speaks of skirmishes going on in the islands of the Hydaspes, and it is obvious, that a camp at Khokur would have facilitated the flank movement purposed, by enabling the Macedonians to screen their boats in the deep western channel, and behind the high islands of the Hydaspes. This, therefore, seems the more probable locality, and if so, the village Koolal may be derived from the Greek κωλύω, to impede, (the place of impediment).*

Ten miles above this is the promontory which appears to me *that* mentioned by Arrian as the point of embarkation. There, on the

* Ἀπέχει δὲ ἥ τε ἄκρα καὶ ἡ νῆσος τοῦ μεγάλου στρατοπέδου ἐς πεντήκοντα καὶ ἑκατὸν σταδίους. Arrian, v. 11.

highest ground of the western bank, stands the old village Boonna, quasi *βωμός*, the altars, where women are ever on the watch to greet Sirdars with *ἐπινίκια*, or triumphal songs. Higher up, and little more than eleven miles from the grand camp, upon the high bank of the river basin, is the village Ahra, quasi *ἀρά*, prayer: in this case addressed probably to the river gods or to Apollo, to whom he sacrificed* after the victory. Here let us pause. The river channel under Ahra is recent and may not then have existed; in which case, the island of Chunnee, and perhaps the small island beyond it, formed part of the Western bank; the latter being the point of embarkation. Right in front of this is a small angular island, and immediately beyond that is a narrow island of great length, which may then have joined that of like shape to the right and have been the larger island mistaken for the Western bank. In this case, the landing would have been above the village Dubb, and the battle probably near Gusseetpoor (quære from *γαίω*, to exult?) But however that be, we have the village Seem (quasi *σῆμα*, the sepulchre). Sirwál from *σύρω*, to sweep away. Roopa (quasi *ῥοπή*, the turn of the scales). Tutrót (incorrectly printed Tutrola) from *τιτράω*, to wound, (the place of wounding, or the deposit of the wounded after battle, or the spot where, according to Curtius, Porus sank wounded). And finally we have the Hindi town Sookchynepoor (built upon the site of a town whose name is lost) the place of comfort and enjoyment where the army refreshed after the battle, celebrating the obsequies of the slain with chariot races and gymnasia.

The whole of the tract from Mungla to Sookchynepoor is so lovely, so bright, so attractive, that it may be considered the paradise of the Greek possessions in the Punjaub; and as connected with the greatest of Alexander's and of their own exploits, would assuredly have been classic ground in their ages. Accordingly a large number of the villages have names derivable from Greek roots; as for instance, Luhree, from *λαρός*, sweet, delicious. Ihma, from *αἷμα*, blood; Sumwál (opposite the battle field, the old capital of the taloquh) from *συμβάλλω*

* Alexander tam memorabili victoriâ lætus, quâ sibi orientis fines apertos esse censebat, soli victimis cæsis, &c. Q. Cur. ix. 1.

It is curious that Ara signifies in the language of the country, a stone platform, or altar.

to encounter. Hahl, from αὐλή, a sheepcote. Mootial, from μοτόω, to dress wounds. Munda, from μύνδος, silent. Wuddala, on the river's brink, from ὑδαλέα watery. Pundôr and Pundora, quasi παυδώρα, (richly endowed,) so named perhaps from some Grecian woman. Boorial (North of the river), from βόρειος, Northern. Bersáti from βύρσα, a hide, or skin for rafts. All Alexander's cavalry were wafted over upon such rafts. Kokur, from κωκύω, to lament. Even Nokodur upon the Western brink of the river basin, may be a corruption of Νίκαια, though not, I think, the Nakaia we are seeking, which ought to be upon the Eastern bank.

It is very true that all these have Hindi terminals, and that many are Hindi or Persian words. But, on the other hand, what has become of the names of the towns and villages founded by the Greeks in this country during a period of a thousand years. We find in the old sites, their coins, their sculptures, their years, covering that period of their dominion; but only in a single instance* have I met with a Greek name unchanged. Even Alexander's capital in Huzara is Sikundurpoor, which is a translation of Alexandria. We all know the obstinacy of Hindus in modifying the names of persons and places to suit their own palate. There is no reason why a Hindu should not pronounce Aluksundur. But he will not. He translates it inevitably into Sikundur. The Greeks born in the country and using the Hindi tongue much more generally than their own Greek, would find it more convenient to accommodate themselves to the ear of the people of the country, than to insist upon their own pronunciation of Greek names.

In comparing together the two great battles fought upon the Jelum, we are struck with certain resemblances. Porus had, according to Arrian, 30,000 foot, 4,000 horse, chariots 300, and 200 elephants. Alexander had wafted over in time for the action, about 14,000 men in all; on foot 6,000, horse 5,000, archers and slingers 3000. Now Sher Singh at Chillianwala, not having been joined by the Peshawur

* This instance is curious and to the purpose. It occurs in an obscure corner of the basin of the Indus, far up amongst the independent Pathans—i. e. about fifty miles above Umb. I stumbled upon it in tracing the course of the Chinese traveller Hiangh Tsang—a remarkable rock is there called Tahitta Butt Kephale Boas, to this day. It is, I fancy, a mass of white quartz. There was a village in that spot, but it was destroyed by the cataclysm of the Indus.

and Huzara forces, had probably about 18,000 regular troops, 20,000 irregulars, and about 55 guns; and Lord Gough had in all 14,000 men under arms. In both cases also the battle was fought on the eastern bank, the Sikhs insanely throwing away the formidable advantage which the high western banks of the very dangerous river Hydaspes would have afforded them. In both cases the victory was for the stranger, and the child of the soil was subdued. Notwithstanding all the errors marking the modern sanguinary and indecisive battle, the Sikhs were, to my certain knowledge, so beaten, that they had no thought of farther resistance, and if followed up next day by half our army would have been driven pellmell into the river. But the subsequent pause; the deplorable abuse of a free press in exposing to an enemy all our weaknesses and fears, very speedily converted the beaten sheep into a plucky lion. Nearly the whole of the Sikh horse had disappeared. Many were drowned in the panic attempt to ford the Hydaspes at Miani. With exception of Soorut Singh, there was in the Sikh army but one thought, and that was how they might shun further encounter.

But here the parallel ceases. And let him who would emulate in a better cause deeds that live fresh in memory after the lapse of two thousand years, study the masterly manœuvre of Alexander, the sagacity which conceived, the patient toil which matured, the consummate skill and courage which completed the operation. Above all let him see what distinguished Alexander from other conquerors and secured to his successors for many centuries the dominion of the world. Many have united to Alexander's courage, a skill little inferior to his, and have led troops equally hardy and equally disciplined to the conquest of foreign realms. But how few have united to those soldierly attributes, the princely generosity, the simple manners, the hardy habits, the good faith, the handsome sentiments of others, the truly gentlemanly spirit of the hero, which distinguished Alexander beyond almost every character of history, attached to him his soldiers, won the hearts of his enemies, and needed but more perfect light to have made him a model for the human race.*

* No excuse is here offered for Alexander's faults or crimes. But we must remember that occasional intemperance was inculcated by his religion as a sacrifice to Bacchus, and that ambition formed the highest obligation in the code of pagan virtue.

Of the course of Alexander after the victory on the Hydaspes, the following notes are offered as aid to those whose position near the scene may enable them to prosecute the enquiry. Curtius altogether omits notice of the Akesines or Chenáb. Arrian truly describes it as being more than a mile wide during the monsoon. But he adds,* the great danger to the boats was from the power of the current, and the huge stones hurled down thereby.

In the present day, and at the ferries ordinarily used by armies in their passage to Lahore and Umritsir, the Chenáb is a less rapid river than the Hydaspes, and far less dangerous; being spread over an immense surface of the finest sand. In order to find shingle we must ascend above the junction of the river Tâhi of Jumboo, with the Chenáb, and in order to find large shingle and a torrent capable of hurling it along, we must ascend to the Kana ke Chuk ferry, four miles below Aknoor, where indeed the torrent is fearful and the boulders are of massive size.

But it must be borne in mind, that the river Akesines is liable at this point to considerable fluctuations of course. The slope of the earth is South West, but the direct line of issue of the river from the mountains is due South, and there can be little doubt that if ever this river has been a mountain lake, on its escape from the mountains, its main stream rushed down southward, whilst its inferior currents followed the natural level and streamed past Hummeerpoor, about eighteen miles further west. But ages of tranquillity enabled the main stream to pursue the natural level of the country, and, seventy years ago, the Akesines rolled past Hummeerpoor. Then came a memorable drought and famine, and at its close the river came down in a flood of such power as to bear onward in the direct course southward as far as Thoob; a course which it retains to this day, although the old channel (a considerable river) still runs under Hummeerpoor.

* Εἶναι γὰρ ἵνα ἐπέρασεν Ἀλέξανδρος αὐτὸν ἐπὶ τῶν πλοίων τε καὶ τῶν διφθερῶν ξὺν τῇ στρατιᾷ, τὸ μὲν ῥεῦμα ὀξὺ τοῦ Ἀκεσίνου, πέτραις μεγάλαις καὶ ὀξείαις, καθ' ὧν φερόμενον βίᾳ τὸ ὕδωρ κυμαίνεσθαί τε καὶ καχλάζειν· τὸ δὲ εὖρος σταδίους ἐπέχειν πεντεκαίδεκα. Καὶ τοῖς μὲν δὴ ἐπὶ τῶν διφθερῶν περῶσιν εὐμαρῆ γενέσθαι τὸν πόρον· τοὺς δ' ἐν τοῖς πλοίοις διαβαίνοντας, ἐποκειλάντων πολλῶν πλοίων ἐπὶ ταῖς πέτραις καὶ ξυναρράχθέντων, οὐκ ὀλίγους αὐτοῦ ἐν τῷ ὕδατι διαφθαρῆναι. Arrian, lib. v. cap. 20.

The question then is, which of these courses was pursued by the Akesines when Alexander crossed it. Now, I doubt whether the current of the river, when it flowed beneath Hummeerpoor, would have sufficed for the effects attributed to it by Arrian. The declivity is not sufficient nor are the boulders there of a size to be dangerous to boats. I therefore incline to think the Akesines held its present course; and we have next to see what motives could have induced Alexander to deviate from the direct line of advance toward India and to have neglected the ferries at Wuzeerabad, Rámnugur and Pool.

Alexander, after his conquest of the Jetch Doaba (the land between the Jelum and Chenab) found in his front the river Akesines, more than a mile in breadth, and swollen by the rains and melted snow. On the farther bank lay the army of Porus the 2nd, ready to oppose him. And that prince had probably secured or destroyed all the boats lying within his reach, as we know the first Porus to have done at the Hydaspes. Alexander had tried the valor of the Rajpootres, and had found them the most formidable of the tribes of Asia. On the other hand, Abisares, the king of the mountains in whose skirt he was encamped, had placed his kingdom* at his disposal; and the brother of Abisares was in Alexander's camp as a hostage for the good faith of Abisares. It was obviously Alexander's sane policy to cross the Akesines within the territory of Abisares, which must have extended at least to Thoob, and probably southward of that taloquh, as at this day. My impression therefore is, that Alexander crossed the river at the Kana ke Chuk ferry, where the Akesines is precisely as described by Arrian, a torrent hurling along in its course large rocks dangerous to navigators. If this surmise be correct, Alexander's course would have been through Runjeet Gurh upon Sialkote, the ancient capital of the Powars,† in order to route the forces of Porus the 2nd. This prince having shown the white feather, Alexander sent a force in pursuit of him, and continued his own course, guided no doubt by the importance of the towns ahead, or of the

* Ἐν τούτῳ δὲ παρά τε Ἀβισάρου πρέσβεις ἦκον, ἐνδιδόντες αὐτόν τε Ἀλεξάνδρῳ Ἀβισάρην καὶ τὴν χώραν ὅσης ἦρχε· &c. καὶ τὸν ἀδελφὸν τὸν αὑτοῦ ξὺν τοῖ ἄλλοις πρέσβεσι παρ Ἀλέξανδρον ἔπεμψε. Arrian, v. 20.

† The name Porus is manifestly derived from Pooroowar now corrupted into Powarr. The Pooroowars were Rajas of Sealkote.

power of the forces prepared to defend them. It seems however manifest from Arrian's* account that he invariably completed the conquest of the greater part of the Doaba invaded, ere he crossed the river into another Doaba. This was sound policy. But this circumstance renders it extremely difficult, in the probable change of the few names of towns mentioned by his historians, to trace his course to the river at which it terminated.

Curtius's description† of the beautiful Jetch Doaba is most graphic and most faithful, and may encourage us to trust his account of the tribes with whom Alexander came in contact. The rhinoceros, indeed, has long since vanished with the forests which sheltered him, but I disinterred, at Russool on the Hydaspes, the bones of the wild elephant in considerable number.

Arrian, after mentioning that Alexander in pursuit of Porus 2nd came to and crossed the river Hyphasis, and found it as broad as the Akesines, but with a far slower current ; (an argument for his having crossed the Akesines near the mountains, and the Hyphasis far from them, the Chenáb being at equal distances nearly double the size of the Ravi,) says, that Alexander passed through all the country border-

* Προχωροῦντι δὲ αὐτῷ ἐπέκεινα τῆς ὕχθης τοῦ Ὑδραώτου τοὺς μὲν πολλοὺς καθ' ὁμολογίαν προσχωρεῖν ξυνέβαινεν v. 21—and again, after destroying Sangala. Τὴν χώραν δὲ, τῶν Ἰνδῶν τοῖς πάλαι μὲν αὐτονόμοις, τότε δὲ ἑκουσίως προσχωρήσασι προσέθηκε· καὶ Πῶρον μὲν ξὺν τῇ δυνάμει τῇ ἀμφ' αὐτὸν ἐκπέμπει ἐπὶ τὰς πόλεις αἳ προσκεχωρήκεσαν φρουρὰς εἰσάξοντα εἰς αὐτὰς· αὐτὸς δὲ ξὺν τῇ στρατιᾷ ἐπὶ τὸν Ὕφασιν ποταμὸν προὐχώρει, ὡς καὶ τοὺς ἐπέκεινα Ἰνδοὺς καταστρέψαιτο. Arrian, lib. v. cap. 24.

† Multa materia navalis in proximis montibus erat, quam cædere aggressi magnitudinis inusitatæ reperere serpentes. Rhinocerotes quoque, rarum alibi animal, in iisdem montibus erant. Cæterum hoc nomen belluis eis inditum a Græcis: sermonis ejus ignari aliud linguâ suâ usurpant. &c. Silvæ erant prope in immensum spatium diffusæ, procerisque et in eximiam altitudinem editis arboribus umbrosæ. Plerique rami instar ingentium stipitum flexi in humum, rursus, qua se curvaverant, erigebantur adeo, ut species esset non rami resurgentis, sed arboris ex sua radice generatæ. Cœli temperies salubris : quippe et vim solis umbræ levant, et aquæ largæ manant e fontibus. Cæterum hîc quoque serpentium magna vis erat, squamis fulgorem auri reddentibus. Virus haud ullum magis noxium est : quippe morsum præsens mors sequebatur, donec ab incolis remedium oblatum est. Q. Curtius, lib. ix. cap. 1.

ing the Hyphasis, i. e. on the southern border of the Ravi, and came (in progress to Σάγγαλα,) first to the town Πίμπραμα upon the Hydraotis, where the Ἀδραῖσταί, an Indian tribe, submitted. There halting one day, he came on the third to Σάγγαλα, where the Καθαῖοι, a warlike and very powerful tribe, were ready to defend their city with a formidable army. This city was moated on one side with a marsh, it had walls, and on the dry side a triple row of waggons* linked together formed a triple rampart around a mound from which the enemy launched their arrows and darts. This town appears to have cost Alexander much trouble. The enemy's loss is recorded by Curtius at 8000, by Arrian at 17000. The city therefore must have been very large. It may have been on the Ravi, or one march from it. It was destroyed by Alexander. There was a mound on one side, which was probably the brick kiln from which the city was constructed. The swamp which half girdled it† may have been either a natural marsh, or an old channel of the Ravi, or the hollow, so common near Indian cities, caused by excavating the soil for the manufacture of bricks. This is frequently found in the form of a ditch; economy causing the people to dig at the points nearest to the site of the proposed building, and the great value of land near a town restricting the excavations to a certain surface. Supposing the palus to have been a natural marsh, its product the Singhara‡ nut may have given the town the name Singhara, which the Greeks would easily write Sángala. The Kathaioi had been at war with the Oxydrakoi and Malloi, so that Lahore, or a

* Ἵνα οἱ Καθαῖοί τε καὶ οἱ ἄλλοι πρόσχωροι αὐτοῖς ξυνελήλυθότες πρὸ τῆς πόλεως παρατεταγμένοι ἦσαν ἐπὶ γηλόφου οὐ πάντη ἀποτόμου· κύκλῳ δὲ τοῦ γηλόφου ἁμάξας περιστήσαντες, ἐντὸς αὐτῶν ἐστρατοπέδευον, ὡς τριπλοῦν χάρακα προβεβλῆσθαι τῶν ἁμαξῶν. Arrian, v. 22.

† Ἐπὶ πολὺ γὰρ ἐπέχον τὸ τεῖχος τῷ στρατοπέδῳ κυκλώσασθαι οὐ δυνατὸς ἐγένετο· κατὰ δὲ τὰ διαλείποντα αὐτοῦ, ἵνα καὶ λίμνη οὐ μακρὰν τοῦ τείχους ἦν. Arrian v. 23.

Ad magnam deinde (ut in ea regione) urbem pervenit, non muro solum, sed etiam palude munitam. Cæterum barbari vehiculis inter se junctis dimicaturi occurrerunt. Aliis tela, aliis hastæ, aliis secures erant: transiliebantque in vehicula strenuo saltu quum succurrere laborantibus suis vellent. Curtius ix. 1.

‡ In India and in Cashmere the Singhara nut forms an important article of food, and in Cashmere yields a revenue to Government. It grows at the bottom of marshes. The kernel, which when roasted resembles the chestnut, is contained in a thorny shell.

site westward of that city, would answer for the position of Sángala and Pimpráma. But although a channel of the Ravi runs under the walls of Lahore, and although its position must have given it consequence from an early date, yet we learn from all the traditionary ballads of the Punjaub that Lahore was called in olden times Oodinugri.

Arrian relates no more regarding the Bári Doábá. But Curtius states that, on leaving Sángala,* Alexander came to a strong city prepared to resist him, but for a sedition which opened to him the gates; that he spared this and other cities which submitted, and then came into the kingdom of Sophis, or the Sophitis, of whose dress, laws and manners, he gives a most interesting account. "A race," he says, "although barbarous, of surpassing wisdom and excellent morals. The children are not educated at the caprice of their parents, but entrusted to persons appointed to instruct them. The deformed are destroyed. Marriages are sought, not for the sake of rank and connection, but for the beauty of the parties." Their king Sophis, or Sophtis, was dressed in a gown of purple descending to the feet. He wore golden slippers, his arms and wrists were enclapsed in pearls, and large and lustrous

* Ipse cæteros ad urbem validam in quam aliarum quoque confugerant incolæ, duxit. Oppidani missis qui regem deprecarentur, nihilominus bellum parabant. Quippe orta seditio in diversa consilia diduxerat vulgum; alii omnia deditione potiora, quidam nullam opem in ipsis esse ducebant. Sed dum nihil in commune consulitur, qui deditioni imminebant, apertis portis hostem recipiunt, &c. &c. Hinc in regnum Sophitis perventum est. Gens (ut barbari) sapientiâ excellit, bonisque moribus regitur. Genitos liberos non parentum arbitrio tollunt aluntque, sed eorum quibus spectandi infantium habitum cura mandata est. Si quos segnes aut aliquâ membrorum parte inutiles notaverunt, necari jubent. Nuptiis coëunt non genere ac nobilitate conjunctis, sed electa corporum specie, quia eadem æstimatur in liberis. Hujus gentis oppidum cui Alexander admoverat copias, ab ipso Sophite obtinebatur. Clausæ erant portæ: sed nulli in muris turribusque se armati ostendebant: dubitabantque Macedones deseruissentne urbem incolæ, an fraude se occulerent; quum subito patefacta porta, rex Indus cum duobus adultis filiis occurrit, multum inter omnes barbaros eminens corporis specie. Vestis erat auro purpurâque distincta, quæ etiam crura velabat. Aureis soleis inseruerat gemmas; lacerti quoque et brachia margaritis ornata erant. Pendebant ex auribus insignes candore et magnitudine lapilli. Baculum aureum berylli distingnebant: quo tradito precatus ut sospes acciperet, se, liberosque, et gentem suam dedidit. Nobiles ad venandum canes in ea regione sunt, &c. ix. 1.

gems depended from his ears. In his hand was a golden sceptre studded with beryls, more probably turquoises. What a complete picture is this of a Punjaubi prince of the present day, unaltered by the lapse of twenty-two centuries. But, alas, in what country of the wide world, barbarous or civilized, shall we find the race that will not prostitute their daughters at the accursed shrines of ambition and of mammon? In this country Alexander found dogs, four of which would attack a tiger. Dogs so staunch, that when once they had seized the quarry, they would suffer themselves to be cut piecemeal rather than relinquish their hold!

From this region he came to the Hyphasis and found Phegelas, king of the people there, who received him with tribute. Halting there two days, he then prepared to cross the Hyphasis; difficult of passage not only from its breadth, but on account of *rocks* in the channel.

King Phegelas and Porus both assured Alexander that on crossing the Hyphasis he had eleven days' march through vast deserts, which would bring him to the Ganges, the largest of Indian rivers. That the farther bank was occupied by the Gangaridæ and Pharrasii, whose king Aggrammen obstructed the advance, with 20,000 horse, 200,000* foot, 2,000 chariots and 3,000 elephants. The said Aggrammen being a handsome barber, who, having won the affections of the queen, had murdered the king and the royal children and had usurped the government. Doubting whether his army would follow him upon such an enterprize, Alexander called a council and found them resolute to proceed no further. This is the account of Curtius.

Arrian mentions no particulars of Alexander's progress from Sángala to the Hyphasis.† He says that the Mulliks beyond the Hyphasis were wealthy, that they tilled the soil, yet were soldiers and just statesmen, and had more and braver elephants than other inhabitants

* Curtius says, "ducentisque peditum," but there can be no doubt that he meant "ducentis millibus."

† Τὰ δὲ δὴ πέραν τοῦ Ὑφάσιος εὐδαίμονά τε τὴν χώραν εἶναι ἐξηγγέλλετο, καὶ ἀνθρώπους ἀγαθοὺς μὲν γῆς ἐργάτας, γενναίους δὲ τὰ πολέμια, καὶ εἰς τὰ ἴδια δὲ σφῶν ἐν κόσμῳ πολιτεύοντας. Πρὸς γὰρ τῶν ἀρίστων ἄρχεσθαι τοὺς πολλοὺς, τοὺς δὲ οὐδὲν ἧττον τοῦ ἐπιεικοῦς ἐξηγεῖσθαι· πλῆθος τε ἐλεφάντων εἶναι τοῖς ταύτῃ ἀνθρώποις, πολύ τι ὑπὲρ τοὺς ἄλλους Ἰνδοὺς, καὶ μεγέθει μεγίστους τε καὶ ἀνδρείᾳ. Ταῦτα δ' ἐξαγγελλόμενα Ἀλέξανδρον μὲν παρώξυνεν ἐς ἐπιθυμίαν τοῦ πρόσω ἰέναι αὐτόν· οἱ δὲ Μακεδόνες ἐξέκαμνον ἤδη ταῖς γνώμαις, &c. Arrian, v. 25.

of India. In the protected Sikh States (as they were called) the same may yet be found. Arrian is silent about the rocks of the Hyphasis. He says that Alexander prepared to cross the Hyphasis, but that the Macedonians, disheartened with toil and peril, refused to follow him.

Now from the foregoing account the following queries naturally suggest themselves :—

1st. Who were this warlike tribe of Kathaioi, who had such abundance of waggons, and used them, as tented tribes might, for ramparts ?

2nd. Who were the Sophtis, in juxta-position, whose king wore robes descending to the feet, and whose country produced tiger-hounds. Who were the Ἀδραῖσταί at Pimprama on the Hydraotes ?

3rd. Who were the Phegelas ? living on the right bank of the Hyphasis according to Curtius, and the Præsii living beyond the river, according to Plutarch ?*

4th. Is the Hyphasis the Beyass or the Sootlej ? If the Sootlej : then which is the Hysudrus ?

5th. How could Alexander have found rocks in either ?

6th. How can we reconcile the distance noted by Curtius as intervening between the Hyphasis and Ganges, of eleven marches of desert, with the actual space of twenty marches or two hundred and twenty miles to Hurdwar, or twenty-three marches to Delhi on the Jumna ?

7th. Who was king Aggrammen, and where was his capital ?

8th. How was Alexander to reach the Ganges until he had crossed the Jumna ?

9th. The Gangaridæ are no doubt the people of the Ganges ; but who are the Pharrasii beyond the Ganges ?

Upon all these heads I can offer little more than conjecture ; nor does it seem to me probable that the greater number will ever be satisfactorily solved.

Who were the Kathaioi ? There is a people chiefly inhabiting the Punjaub, which differs in some respects from every other people of Asia. I speak of the Kuttris. In the provinces south of the Sootlej, the name Khethri or Kshethri appertains to the Rajpootre tribe in all

* I have only Langhorne's translation to refer to.

its branches. But north of the Sootlej the Kuttri is exclusively a merchant or a soldier: most generally the former. The Khethri south of the Sootlej is often found at the plough but never behind the counter. The Kuttri of the Punjaub is never a child of the soil, although he may have been tempted occasionally, under Sikh patronage, to dispossess the owner of land and settle down as a husbandman. The Kuttri of the Punjaub is distinct in physical features from all other races of India; and, of those of Asia, he most nearly resembles the Jew. This resemblance often extends to dress, and is almost startling; whether it be that devotion to similar pursuits begets physical resemblance, or that he draws his origin directly from the same Arab stock as the children of Israel. The features of the male are high and often regular, he wears a long beard and moustache, a large turban, and robes precisely similar to those depicted in drawings of the ancient Israelites. The features of the female are delicate, but seldom regular. She is much fairer than other females of the Punjaub, and of more delicate proportions; circumstances which render the Kuttrani an object of great attraction to Musulmáns and the subject of many an acted romance. She scarcely conceals her face. At fairs, a husband with his wife and children will be seen making little social groups of peculiar interest to an English eye: the wife being unveiled, and displaying head ornaments of the purest gold, often of great price. The women much affect the red phylacteries worn by the Jews. The white gown of the children is curiously adorned with embroidered lozenges and other quaint figures, half Mosaic, half savoring of Free-masonry.

The Kuttri is by religion Hindu, but he is the most liberal of that faith. He is ready to swear upon the Grunth of the Sikhs* or the Qorân of the Muhammedan. A Kuttri will take back an erring wife. He will often refuse five or six hundred rupees damages in order to recover her. She has nothing to fear from him on her return. He appears to me by far the most humane in his family and social affections of all the mercantile tribes of India.

In his connections he is most scrupulous. The laws by which Hindu and other Asiatic tribes keep themselves distinct from the tribes around them, are by none more rigidly observed than by the

* Baba Nanuk, founder of the Sikh religion, was a Kuttri.

Kuttri. We have therefore full assurance that his peculiarities belong to the stock of which he is descended. He has no historical records, but believes himself of the race of the hero Rám,* and probably with some reason. The Kuttris are diffused through the whole Punjaub. There is probably not a village which has not one or more of them. When they take military service they make good horse and foot soldiers. They appear to me to abound most upon the banks of the Sootlej. Fifty years have scarcely elapsed since they penetrated to the upper valleys of Huzura, a circumstance tending to account for their nonconversion to Islám, when nearly all other Punjaub tribes of the plains were converted.

Now, it is manifest, that the Kuttri tribe is not aboriginal. It would be manifest, I think, to all acquainted with the tribes of India, that his descent is from none of them. In spite of the levelling influence of the Hindu idolatry he differs essentially from every Hindu tribe, and from none more than from the Khettris of India.

One branch of the Kuttri race is called Sohbti, agreeing as well with the Greek name Σωπείθοι† as Kuttri agrees with Καθαίοι. This branch is found in the Doaba of the Ravi and Sootlej; in the eastern

* The Kuttri says of himself that he is of one and the same race as the Khettri of Hindustan, but that to escape the great persecution of that race by Pursram Bráhman, who had vowed to exterminate them, those living in the Punjaub renounced their birthright as Rajpootres and Khettris and became merchants.

† Strabo calls this tribe Σωπείθοι, and says that the salt mines are in their country. The town of Pind Dadun Khan is peopled by Khethris and their most celebrated Teerut is Kuttahss in the Salt Range.

Φασὶ δ' ἐν τῇ Σωπείθους χώρᾳ ὀρυκτῶν ἁλῶν ὄρος εἶναι, ἀρκεῖν δυνάμενον ὅλῃ τῇ Ἰνδικῇ. Straho, xv. 700.

The salt hills are intimately associated with the origin of the Kuttri tribe. Their yearly purification at the fountain of Kuttahss, which I once witnessed, is one of the most picturesque and interesting spectacles in the world. Kuttahss is a fountain rising from a cleft in the limestone rock, and flowing from thence eastward down a valley of the table-land. It is said to be one of the eyes of the world and to be quite unfathomable, until a scientific gentleman the other day plumbed it with a few fathoms of line. The Kuttris from all parts assemble here yearly to bathe and worship.

The Sohbtis are in great force in the town of Jullalpore Jutt, near Guzerat in the Jetch Doaba.

portion of which is to this day found the Tázia or tiger-hound; though the spread of cultivation having extirpated the tiger, and the antelope itself being rare, the Tázia hound will also soon disappear. The robe flowing to the feet may still be seen in some districts. At Singhoa on the right bank of the Jelum it is still worn. It is singularly graceful. Whether the Kathaioi were the Kuttri tribe, or the Rajpootre* tribe of Katul, the large number of their waggons seems to denote that they were the Bunjaras, or itinerant grain merchants, of the day. If the waggons had been used as in Scythia, the people had not been found inhabiting a city. The name Kathaioi savours indeed of China. In Russia it would signify Chinese. But the Kuttri at least has no Tartar blood, although he may be one of the aboriginal tribes of Kathay, driven to migrate by the spread of Tartar hordes westward. However this be, there seems little doubt that the old town Katooha on the right bank of the Ravi was founded by the Kathaioi, whoever they were.

We find it difficult to recognise in the cheating, lying Greek of modern days the representative of the heroes of Leuctra and Thermopylæ;—in the over-reaching, crouching, sordid Jew, the valiant guardian of the Divine oracles;—in the peaceful Bhara and Parsee devoted to gain, the murderous assassin and gallant ghubbre;—and it may be equally hard to think the Kuttri of the Punjaub the Kathaioi who so long set Alexander at defiance, or to believe the assertion of this mercantile race that they are of the same blood as the hero Rám. Yet the handful of horse, who so electrified some of our squadrons in the late war, were probably, one half at least, innocent, meek, pains-taking, ghee-retailing Kuttris.

It must be observed that in the Punjaub any profession but that of arms degrades the Rajpootre. That, whereas in our provinces the Rajpootre thinks it no disgrace to drive the plough; in the Punjaub he loses his name of Rajpootre thereby, and becomes merely Thakoor, and can no longer aspire to the daughter of a house which has always followed the profession of arms. Numbers of these degraded Rajpootres have become converts to Islám, and there seems to be some

* This Rajpootre tribe I have found at Chota Soochaytgurh near Gumrola, and they assure me that they have many families dwelling near Lahore.

idea in the Punjaub that the Juts and Goojjurs* are degraded Rajpootres. It is difficult therefore to say what is the origin of the designation, Rajpootre, and to whom it was originally applied, and when first invented. Most probably it was first assumed by strangers entering a new country, where their claims could not be disputed for want of evidence, and it becomes a curious query, whether Indo-Greeks, sons of Greek fathers and Goojjur mothers, carrying their arms from the Punjaub southward were not the first self-styled Rajpootres. As the whole system of Hindu idolatry (I speak not of their once pure Deism) appears to have been introduced by the Egyptian conqueror Osiris and the Macedonian Alexander, so it is natural to believe that the originators of the system of mythology would reserve for themselves a choice place amongst the castes arising therefrom ; and as the illustrious families of Greece boasted descent from Hercules, so the Rajpootre boasts to be the offspring of Heri,† who without doubt is identical with Hercules.

Both the account of Curtius and the circumstances of the case render it almost certain that Alexander reached the Sootlej. Had only the small and fertile Jullundur Doaba remained to be conquered, the Macedonians had never broken into rebellion on account of a campaign of a fortnight. Neither is it at all probable that Alexander left so important and valuable a possession unconquered. Whether the Beyass in that age coursed W. S. Westward, almost under the walls of Kussoor, or joined as at present the Sootlej by a course nearly South West,‡ it may appear marvellous that so particular an historian as Arrian, and one who had made geography his study, should not at all mention its evidence. But still more marvellous were it, that the

* In Upper Huzara is still found a Chowkan branch of the Goojjur tribe. They style themselves Rajpootres and Goojjurs.

† The name Hericulea is still borne by women in Bengal.

‡ The Sootlej after its confluence with the Beyass takes the new title of Gurra.

The Sootlej,—Suttadra,—Hysudrus, was regarded by Arrian as tributary to the Beyass, as we learn from the following passage. Καὶ τὸν Ὕφασιν ἐπὶ τούτῳ ὁ Ἀκεσίνης παραλαβὼν τῷ αὐτῷ δὴ ὀνόματι ἐς τὸν Ἰνδὸν ἐμβάλλει. ξυμβαλὼν δὲ ξυγχωρεῖ δὴ τῷ Ἰνδῷ. Arrian, lib. vi. cap. 14. If therefore Alexander was about to cross at the Hurri ké pultun ferry of the Sootlej; Arrian's omission of the Hysudrus

Sootlej, a river so much larger and more important, the barrier between two empires, should escape his notice. The difficulty is scarcely cleared by taking Alexander to Hurri ké pultun, whither he might have been attracted by the fame of Hercules, who gives it name, and whose exploits it was his ambition to surpass: for it was his system to build, not merely to overthrow: to establish his empire in every conquered province ere proceeding in advance: and the rich and important Jullundur Doaba would never have escaped his notice, being in fact the gem of the Punjaub. Neither is it likely that with the choice between the long desert tract by the Hurri ké pultun and the comparatively fertile country of the Jullundur and Loodiana route, with an army discouraged by the prospect of fresh toils and privations, Alexander should deliberately select the less inviting road.

It is therefore my belief that Alexander's progress was arrested at the Phullore ferry. The rocks recorded by Curtius were unknown or forgotten by Arrian. Curtius's history, though evidently compiled from authentic sources, wants symmetry of parts, a defect which is apt to mark a compilation from several different authors, and to which his ignorance of geography and of tactics afforded him no check.

It seems to me the less of two great difficulties to assume that Alexander meeting with ready submission in the Jullundur Doaba and no check or difficulty at the passage of the Beyass, both were passed over with little notice in the lost histories of Ptolemy and his contemporaries; and that subsequent historians knowing that the Punjaub derived its name from its five rivers, and counting the Indus as one of them, were perplexed by the occurrence of a sixth and dropped altogether *that* which was most slightly indicated, in the belief that it was a mere torrent or an arm of the fifth river.

is explained because Arrian calls the river there by the name of Hyphasis. In this case he may have found it sufficient to detach a division of his army to take possession of the Jullundur Doaba. The name, however, Phugla seems to refer to Phuglore or Phullore, and the difficulty of procuring material for the construction of the altars would have been tenfold at the Hurri ké pultun.

I can no where find in Strabo any mention of the R. Hysudrus. Pliny makes it 168 miles from the Hyphasis, and the distance between the Hydaspes and Hyphasis 3,900 or 4,900. In fact Pliny writes not Geography, but Romance.

Curtius's and Arrian's description of the people and country beyond the terminal river will answer only the land and people south of the Sutlej. From Loodiana, eleven marches for an army, of eleven miles each, would exactly bring Alexander to Kurnaul, where the "vastæ solitudines" (not altogether obliterated by cultivation even in the present day) cease, and he would find himself in contact with the dominions of king Aggrammen and with his countless army. This tract as appertaining to Gangetic India would easily be accepted by an historian so ignorant of geography, for the Ganges: being in fact the land of the Jumna. Kurnaul is about five miles from that river. This interpretation will reconcile many difficulties which Arriau's silence and Curtius's random record have left for our disposal.

In this case we may assume that Phullore is the modern corruption of Phegela or Phuglore, where Alexander built the twelve gigantic altars* that were to bear record of the limits of his conquest. And we may surmise that Agra (one of the oldest Hindu sites in India) was at that time the capital of Hindustan, and that Maun was the name of the usurping barber. The greater salubrity of the banks of the Jumna has ever given it the preference over its more sacred rival, the Ganges, as the site of capital cities.

It would perhaps be difficult to imagine any site better adapted to the purpose of Alexander, than that of the present castle of Phullore. The position is conspicuous, yet so remote from the action of the river Sutlej as to allow no cause for apprehension of its being undermined, and it stands at the grand gateway, so to speak, of the Punjaub southward, which was also the first approach from southern lands to the majestic empire he had just completed, more by his wonderful tact and justice and gentlemanly bearing than even by his military genius and dauntless courage.

Of these altars Arrian says: "There allotting to the army their several parts, he commanded them to build twelve altars, in height equal to the loftiest towers, in solidity exceeding towers, grateful offerings to the gods, who had so far led him in triumph, and memorials also of his own labours." Curtius says: "Two days were consumed in anger, on the third he came forth and erected twelve altars of squared stone, as a monument of his expedition: he also ordered the defences of the

* Pliny however says the altars were built on the further bank.

camp to be enlarged and beds to be left of larger size than suits the human frame; that he might exaggerate the appearance of all things, deceptively fashioning miracles for posterity." Strabo says: "Alexander, upon the limits of his Indian expedition, placed altars at the utmost point to which he had attained Eastward, imitating Hercules and Dionysus, whose practice it had been."* Pliny, (I quote from Holland's translation,) says, "from which (i. e. Udaspes) to Upasis, a river of no lesse account than the other, 4900 or 3900 (query miles? or stadia?) and there an end of Alexander's voiage. Howbeit, he passed over the river, and on the other side of the banke, hee erected certaine altars and pillars and there dedicated them."† Plutarch says: "However, he first contrived many vain and sophistical things to serve the purposes of fame: among which were arms much bigger than his men could use, and higher mangers and heavier bits than his horses required, left scattered up and down. He built also great altars

* Ἔνθα δὴ διελὼν κατὰ τάξεις τὴν στρατιὰν, δώδεκα βωμοὺς κατασκευάζειν προστάττει· ὕψος μὲν, κατὰ τοὺς μεγίστους πύργους· εὖρος δὲ, μείζονας ἔτι ἢ κατὰ πύργους· χαριστήρια τοῖς Θεοῖς τοῖς ἐς τοσόνδε ἀγαγοῦσιν αὐτὸν νικῶντα, καὶ μνημεῖα τῶν αὐτοῦ πόνων. Ὡς δὲ κατεσκευασμένοι αὐτῷ οἱ βωμοὶ ἦσαν, θύει δὴ ἐπ' αὐτῶν, ὡς νόμος· καὶ ἀγῶνα ποιεῖ γυμνικόν τε καὶ ἱππικόν. Arrian, v. 29.

Tertio die processit, erigique duodecim aras ex quadrato saxo, monumentum expeditionis suæ; munimenta quoque castrorum jussit extendi, cubiliaque amplioris formæ quam pro corporum habitu relinqui; ut speciem omnium augeret, posteritati fallax miraculum præparans. Q. Curtius, ix. 3.

A gigantic iron stirrup was some years ago found near the Indus. The people attributed it, some to Alexander, some to Raja Russaloo. A curious tradition exists of the conquest of Publi, in Huzara, by the Sahanties from beyond the Indus. The Sahanties are more celebrated for contrivance and wiles than for courage. Their chief, arriving by night at the shrine of Meeán Kháki in Publi, departed before daybreak, leaving behind him an iron drinking vessel of capacity to bold 300 lbs. of water; an iron club, thirty feet in length; and a pair of well worn slippers, six feet in length. The people in the morning came timorously to peep at the redoubted Sahantie invader. They found, not him, but these gigantic tokens of his visit: struck with terror, a general council was called, and the submission of the valley was tendered to the Sabantie. This event may not be wholly unfounded on fact, and if so, the device may have been suggested by some tradition of Alexander's trick.

Ἀλέξανδρος δὲ τῆς Ἰνδικῆς στρατιᾶς ὅρια βωμοὺς ἔθετο ἐν τοῖς τόποις εἰς οὓς ὑστάτους ἀφίκετο τῶν πρὸς ταῖς ἀνατολαῖς Ἰνδῶν, μιμούμενος τὸν Ἡρακλέα καὶ τὸν Διόνυσον. Strabo iii. 171.

† See Pliny vi. Book, —p. 125, Holland's translation.

for which the Præsians still retain much veneration, and their kings cross the Ganges every year to offer sacrifices in the Grecian manner upon them."* Robertson says: "The scene of this mutiny was on the banks of the Hybasis, the modern Beyah, which was the utmost limit of Alexander's progress in India. From this it is manifest that he did not traverse the whole extent of the Punjaub. Its Southern boundary is formed by a river anciently known by the name Hysudrus and now by that of the Setlege, to which Alexander never approached nearer than the Southern bank of the Hyphasis, where he erected twelve stupendous altars, which he intended as a monument of his exploits, and which, if we may believe the biographer of Apollonius Tyaneus, were still remaining with legible inscriptions, when that fantastic sophist visited India 370 years after Alexander's expedition."†

Now as there is no building stone in the Sutlej below Roopa, it is difficult to imagine this gigantic work progressing with such speed as to be consecrated, with incense offerings by Alexander ere his return from the river. The same difficulty occurs with the Beyass, which below Indore can scarcely be said to have building stone. We must suppose therefore that the tufa,‡ of which the great tope at Manihrgala is constructed, served Alexander for materials, the debris being burnt into lime. It does not seem probable that Alexander would have built those altars in any obscure corner under the mountains, off the road of commerce. If they were on the Beyass, we should look for them from Mirthul to the Sutlej. If they were on the Sutlej, either Phullore (which I think the most probable,) or Hurri ké pultun or Feeroozpore must have been the site. Alexander erected, we have seen, twelve gigantic altars equal in height and exceeding in solidity the grandest towers. What was the ground plan of this memorable monument? Symmetry suggests a square of four higher towers girt with eight towers of less altitude; which is precisely the figure of many of the castles of the Punjaub

* See Plutarch—Alexander—Langhorne's translation.

† See Disquisition concerning India.

‡ Not only the topes, but a more ancient Hindu temple at Kuttahss, ascribed to the Pandoos, is built of tufa—great part of which in the latter temple has been dissolved. It is however far more durable than the red and yellow sandstone used in the Indo-Greek buildings of this Doaba.

to this day, and I never look upon one of those graceful structures without the impression that a model of the Greek altars is before me. It is far from being the sole memento of that remarkable race. The Sikh of the present day, who like the Lacedemonian is sworn from youth to arms, wears like him unmutilated hair, and gathers his turban into folds exactly resembling the low Grecian helmet; and the practice of chaunting triumphal songs, I have already had occasion to mention.* The vine and the olive grow just so far as their steps have trod, and every old site westward of the Jelum teems with gems, coins and sculpture breathing of the Grecian hand.

APPENDIX.

Taxila.—Oriental scholars are fond of identifying the modern village of Tukhtpurri, or Turrukpurri with the Taxila of Greek History and the Tukshasilla of the Sanskrit records. But it appears to me that the grounds of the identification are insufficient. Tukht siguifies a throne, and is a Persian word. Turruk signifies a hyæna, and is a Hindi word. Tuk signifies a balance or test, and is Sanskrit. Purri is Hindi, and Shilla Sanskrit, both signifying a stone, or, slab of stone. The force upon Tukhtpurri or Turruckpurri to reduce it to Tukshasilla,† and from thence to Taxila seems to me unwarrantable. For the first syllable must be wholly dispossessed of its signification to suit the convenience of the transposer, merely because there happens to be a jingling resemblance in sound between Tuk and Tukht. A new syllable "sha" must be created for it, and the ultimate and penultimate syllables must be translated into another language to complete the transformation.

* Arrian speaking of these songs as offered by the Indians to Alexander as his fleet dropped down the Hydaspes adds: Φιλῳδοὶ γὰρ εἴπέρ τινες ἄλλοι, Ἰνδοί, καὶ φιλορχήμονες ἀπὸ Διονύσου ἔτι, καὶ τῶν ἅμα Διονύσῳ βακχευσάντων κατὰ τὴν Ἰνδῶν γῆν. Lib. vi. chap. 3. It is only the older tribes of the Punjaub that have this custom.

† There is not a doubt that Cashmere might be converted into Windermere with less trouble. For instance Cahch, glass; Winder, in the vulgar dialect, quasi window, made of glass; and Mere, a lake, common to both: the glassy lake ! !

With such license there are few words or names of three syllables that might not be converted into almost any other word or name of four syllables.

We are distinctly told by Curtius that Taxiles was the family name, Omphis* the personal name of the prince of the country; that all princes of that house were called Taxiles; and that the capital was Taxila, the largest city between the Indus and the Hydaspes. Now, in this country people never take their names from towns or villages, but ordinarily the villages are called after the name of the founders. Here then our etymologists would present us with an ancient gentleman named Raja Rockingstone, or Raja Touchstone, for the mere purpose of bequeathing his queer name to his capital. If the capital was Tukshasila the Raja was undoubtedly Tukshasili.

There is nothing whatever in the appearance of traditions of Tukhtpurri to justify an assumption of its antiquity, or the belief that it ever could have been the chief town of the Sind Sagur Doaba. The sole monument of which any record remains, is part of a comparatively modern brick wall of a Gukka palace, attributed to the Gukka princess Tukht Bánú; to whom, according to some, the village owes its name and its origin; excepting this poor memorial, the village appears never to have possessed any buildings but huts of mud or of unwrought stone, mud cemented: and what consequence it ever possessed seems to have been due to the accident of having formed the capital of one of the petty sovereignties of the Gukkas, when that kingdom had been subdivided. As already mentioned, it is more than a mile off the high road and so entangled among ravines, to which indeed it owes its existence, in the water they supply, as to be difficult of access. Its position is not at the junction of any important thoroughfares, and the traveller knows of its existence only through maps. The soil on which it stands is not raised by the decay of edifices as in all Indian sites of antiquity.

Purri, signifying a stone, or, stone slab, is a common terminal to villages in this Doaba, as for instance "Bulbulpurri." The terminal

* Omphis, permittente Alexandro, et regium insigne sumpsit, et more gentis suæ nomen, quod patris fuerat. Taxilen appellavêre populares, sequente nomine imperium in quemcumque transiret. Q. Cur. viii. 12.

Silla, also, unaltered by translation to Purri, is common, as "Soorh-silla," a village six koss eastward of Atuk, and about ten koss from Hussun Ubdal. And "Hahsilla," a little town and castle near Pindi Ghayb.

When a town or a village changes its name, if the change be not merely that of pronunciation, it is total. We never find a name half translated and half left in the original tongue. Pentonville may be changed hereafter to Warwick or to Brighton, but not probably to Pentonton. When the name is changed, if the change be not a mere inflection of sound, it will be total; the work of some conqueror who has destroyed and rebuilt it, or of some benefactor who has improved it, or of some fanatic sect who think there is religion in sound, or of some saint whose relics are there deposited. The use of a name to a city is not to describe its peculiarities, but to enable people to find it and to speak about it intelligibly. It can be altered only when a large body of the community are interested in the change. It is very true that the first name of a place is often a description of some peculiarity, as in the case of Turrukpurri, the hyæna's rock, or Tukhtpurri, the slab of stone; because until a place has received a first name, it can be spoken of only by description; as the first Egyptians wrote in hieroglyphics. But the name once established becomes the letter of an alphabet, and people cease to enquire its original meaning or value.

Let us take the instance of Hussun Ubdal. Its oldest name recorded in tradition is Jullal Sirr, the glorious fountain, or, fountain of glory, from the noble spring which there leaps into being from the living rock. Its next name was Hussun Ubdal, from one Hussun, of the Ubdali tribe (still extant in Publi, Huzara), and its latest name, given by the Sikhs, is Punja Sahib, the Sahib's, i. e. Saint's hand-print, from the impression of a hand attributed to the Saint Gulab Dass, although the mason who chiselled it is still alive in the neighbourhood. All these changes are total. Jullal Sirr was not changed into Jullal Chok, nor Hussun Ubdal into Hussun Dewana. The first of these names, Jullal Sirr, being Persian, the place must almost certainly have had an older Hindi name, now lost for ever, unless it be, as I suppose, the Taxila of history.

A Pundit of this place would translate Tukshasilla as the Touch-stone or Test-stone. But if it be not Taxili which took its name

from Taxiles, I think it more probable that the place was so called from a rocking-stone now displaced or lost. For touch-stones are pebbles of black jasper found only in small masses and removed for the use of goldsmiths wherever found. If the Pundit's translation is correct, Tukshasilla was most probably on the Indus, where the touch-stone is common. It is found only in the beds of rivers; whereas the rocking-stone, which would be a durable monument, occurs both in the sandstone and in the lime formation. It is however, not probable that Alexander's friend was either Rájá Rockingstone or Rájá Touchstone.

The same Pundit informs me of a Rájá Tuksh of Cashmere celebrated in the following slokas from the Rámáyana.

युधाजितमातुलेन आहूतोगात् ससैन्यकः। भरतः काश्यपेदेशे हत्वा गन्धर्वनायकान्॥ पुष्करं पुष्कराख्ये तु तक्षं तक्षशिलाकये। स्थापयित्वा तु तौ पुत्रौ अयोध्यामागमत् पुनः॥

"Yoodhajit, his maternal uncle, leading an army through Cashmere summoned Bhurta, having smitten Gundharu kings: and having instated Pooshkurrun (son of Bhurta) at Pooshkurrah (in Cashmere) and Tukshun (son also of Bhurta) in Tukshilla (of Cashmere) returned to Ayoodia."

Rájá Tuksh may have been king of Cashmere, but Taxiles was prince only of Potawar Satur of Chuch. The throne of Tuksh would very probably, if made of stone, be called Tukshilla, but Rájá Tuksh would not have been called Taxiles by the Greeks. He would have been called simply, Τυξ, Tux.

Professor Wilson in his Ariana Antiqua writes thus of Turrukpurri, or rather of Manikyala in its neighbourhood. "In 1808, the embassy to Cabul, conducted by Mr. Elphinstone, when upon their way back to India, arrived at a part of the country between the Indus and Jelum in which, according to the notions of Col. Wilford, the capital of Taxiles, the ally of Alexander was situated." The party sent to search for the city found the tope of Manikyala which is described, he then proceeds: "Its geographical position leaves little doubt of its being the site of the capital of Taxiles, or more correctly speaking of the city Taxila, the Tax-sila of the Hindus; and the identity is confirmed by the ancient remains scattered about the country. The

party that visited Manikyala saw no other vestiges of an ancient city than the tope: but in this they were deceived by the hurried nature of their excursion: they had not time to search, and rather hastily inferred that nothing was to be found. Twelve years afterwards Moorcroft crossing the spot was informed that old wells, fragments of pottery and ancient coins were frequently discovered. Lieut. Burnes obtained while there, old coins and antiques; and M. Conrt, whose opportunities have been still more propitious to discovery, describes the neighbourhood as strewed with ruins, the remains of massive walls, of old wells and of tombs and temples. He found also and opened no fewer than fifteen topes."*

Now, these ruins have been three times sought for by me without success. A very few Cashmerian and Buddhist coins are found in the neighbourhood, as in every old village in this Doaba, but nothing that can justify the belief that a city was ever in the neighbourhood. The only ruins I could find of tombs were those of Sooltán Audum and his successors, Gukkas, at Rabaht, dating back to the 16th century. That Manikyala is an old Buddhist site is without doubt. But that it ever was a city there is not only no proof, but absolutely no probability, and the Buddhist era is considerably posterior to the invasion of Alexander. Hear what the Chinese traveller Hiang Tsang says of Manikyala: "Au sud de Mengholi, Manghul, a 400 li mont Yilo (Jilha perhaps) et a 200 li grande forêt Mahafana† (Mahabunn). De la au nord ouest a 30 au 40 li, Maiukialan, monastere des Fèves. De la a l'ouest, a 60 ou 70 li, monastere fondé par Asoka," the last being the great tope on the Western bank of the river Sohaun, and both topes having been the sites of Buddhist monasteries, not of cities.

* Any reader might suppose that M. Court had found fifteen topes at or close to Manikyala. But the nearest tope to the grand tope of Manikyala is that West of it, about nine miles on the right bank of the Sohaun river, and the remaining fourteen topes were probably those of Khaunpore distant Westward from Manikyala about forty miles.

† It is difficult to say where this Mahabunn, great forest, lay. Mt. Mahabunn lies about 200 li from Mahugul, but due West, not South. This Mahabunn seems to have been intermediate between Mahugul and Mt. Tilha, a celebrated Teerut, i. e. close to Manikyala. The country at present has no forest, though abundance of thorny jungle.

There is indeed no indication in this traveller's account of any city in the neighbourhood. Nor do the Buddhist priests seem to have affected the immediate neighbourhood of cities for the erection of their monasteries and topes. But let us see what the same Chinese traveller says of Taxila. Starting from the Atuk ferry, called by him, Ou to kiahantchha, and identified beyond question, by the presence within three miles of the city Pholotoulo, (i. e. Mullyetoolla, the present Atuk), he says "Passant au midi le Sind qui est large de 3 ou 4 li et coule au Sud oest on vient a Tantcha chilo (lemite de l' Inde du Nord) dependant du Cachemire," and again "On passe le Sind au Nord de ce pays." Now although the distance from Atuk to Tantcha chilo (Tarchailia) is not mentioned by the Journal, yet it appears to have been the first considerable place on that route which answers exactly to Hussun Ubdal, but not to Turrukpurri, and no one will presume to say that the river Sind is passed north of Turrukpurri, whereas this is exactly the fact with regard to Hussun Ubdal. Professor Wilson has not done justice to Mountstuart Elphinstone's research. Had there been ruins of a city at Manikyala he would assuredly have found them. The travellers who have since his mission passed through and dwelt in Afghanistan have added little to the researches of this accomplished historian, who was prevented by circumstances from entering the country he has described so faithfully. The "chilo" of the French translation was probably intended to be read Khilo, for we see in the name of the capital of Gundhara (Kiantolo) that he has for Pekawur* (the Peukelaotis of the Greeks) Pou lou cha poulo, identified by bordering the Indus, and having Chang moukia Phousa, (Chummukia, a considerable town) in its neighborhood.

Professor Wilson's argument seems to regard the sites of Manikyala and Tukhtpurri as one. But there is no visible connection between them, whilst an interval of five miles separates them. Tukhtpurri has not a tope nor a mound nor any other trace of Boodhism in its immediate vicinity. It is a modern looking village, in a wretched ravine-worn arid country, considerably off the highroad.

Let us now consider the site of Hussun Ubdal, known to the

* Pekawur. Peshawur is so called by the Pathans, and this is manifestly the name it bore in Alexander's time. Pekawur may be a contraction of Pookhtoo wur, the gate or entrance to the speakers of Pooktoo, or Pushtoo.

readers of Lallah Rookh, as "those royal gardens which had grown beautiful under the care of so many lovely eyes and were beautiful still, although those eyes could see them no longer." Although there is no more resemblance between the Hussun Ubdal of the poet and the Hussun Ubdal of the traveller, than between the Cashmere of Lallah Rookh and the Cashmere of Goolab Singh, yet there is no spot from Peshawur to Lahore, if we except a tract of the Jelum off the highroad, that can be compared with Hussun Ubdal as the site for a city; whether we consider the comfort of the traveller or the requisitions of the merchant. At Hussun Ubdal the great western road of commerce from Hindustan and the Punjaub to Cabul meets the principal commercial road between Cabul and Cashmere, and another from Pind Dadun Khan and Mooltan. Here two small rivers of the clearest water leap at once into being from the living rock, and nourish by their abundance a shadowy foliage most grateful to travellers upon this desolate tract.

The oldest name for this place of which any record exists is, as already stated, Jullal Sirr, "the glorious fountain." But this being Persian, was probably preceded by a Hindee name, now lost to us. It has since twice changed its title, first to Hussun Ubdal* and afterwards to Punja Sahib. The last, being a Sikh name, is fast disappearing since the destruction of the Sikh empire.

Now this town Hussun Ubdal was, until twelve years ago, the capital of the Tarkhaili clan, who then occupied the country in which Alexander found Taxiles and the city, called after the clan, Taxila. Cities and villages in this part of the world never give their names to tribes but generally take their names from tribes or founders, and if Hussun Ubdal was founded by the clan Tarkhaili, or first rose into consequence as their capital, (which it was fourteen years ago,) there can be little doubt that it was called Tarkhailia, which the Greeks would write Taxila as certainly as they would write Tarkhaili, Taxiles.

But here we arrive at an enigma the solution of which appears remote. For although the Tarkhaili clan inhabit the very spot on which Alexander found Taxiles, and although, excepting the Gukkas, they are the most powerful and remarkable family in this Doaba,

* At Hussun Ubdal is a mound called to this day Tukht Ubdal, the throne of Ubdal. Tukht seems at some remote period to have been a common affix to towns.

connected by tradition with Atuk and claiming past authority up to that fortress and to Chehl a Jungie, East of Morgulla, which gives them exactly what I conceive to have been the dominion of Taxiles, viz. Gundgurh, Kurri, Hurrah, Chuch, and Qatur, yet they disclaim altogether this history, calling themselves Yoosufzyes and tracing their genealogy only eight generations back to Tar Khaun,* whose grandson Boolind crossed the Indus with the conqueror Ahmed Shah, from whom he fraudulently obtained the grant in Jaghir of Gundgurh, Hurrah and Kurri.

That the old Tarkhaili clan should have been driven into banishment trans-Indus is not at all wonderful. That they should there have nourished the remembrance of their lost power and have bequeathed the record from father to son is quite natural: nor were it any novel phenomenon to find Ahmed Shah using their agency as the means of his own conquests. But the difficulty is in their belief that the Tar Khaun of Ahmed Shah's day was the founder of their clan and name.

Still, it is so difficult to imagine any other Punjaubi name that could be made into Taxiles, or to imagine two distinct families of Tarkhaili, the one succeeding to exactly the power and realm of the other after a lapse of 2000 years, without any affinity; that I should prefer the surmise, either that the genealogy is imperfectly preserved or that there were two Tar Khauns in the family at long intervals of time. The genealogy of the Tarkhailis is not preserved in writing and they have no bards.

As to the supposed difficulty of Taxiles having been an Eusufzye, it is in fact no difficulty. The Yoosufzye, who call themselves to this day† Issupzye, are beyond doubt the Aspasioi of Arrian, as the Astakenoi,‡ or tribe of Ashta Khan, of Arrian, are the founders of Hustnugur,

* The genealogy runs thus. It is not preserved in writing and they have no bards to preserve it in song.

1st. Adeen Khaun, Jogi Khaun, Tar Khaun, Taj Khaun, Boolind Khaun, Futteh Khaun, Zuffur Khaun, Sher Zemaun Khaun, Khaun i Zemaun Khaun, Khyrooddeen Khaun, living.

† Yoosufzye should, I believe, rather be written and pronounced Asifzye, which runs easily into Aspasioi. Asif and Afghana are the two fathers of the Pathan race.

‡ In spite of Professor Wilson's objection to the title or terminal, Khaun, as Turkish, and therefore not introduced until the time of the Turkish conquests; the constant occurrence of this terminal in countries and tribes where still in use renders it almost certain that it was known there in Alexander's day. The tract we

both still occupying the sites in which Alexander found them. Again we have in the Moosazye, or children of Moses, the Μουσικανοί of Strabo,* still occupying their old habitat at the S. Western roots of Mt. Mahabunn; whilst the Assazyes, or children of Asa, are found where Alexander found their fathers the Assakanoi, or tribe of Asa Khaun.

Again the Πακτυϊκοί of Herodotus who dwelt upon the Indus conterminous with the mountains are as certainly the Pookhtoo auka,† or, Pooktoo marr, as they are still called by other tribes, i. e. the speakers of Pookhtoo (Pooshtoo) or Afghans, Eusufzye, &c. whilst the Πευκελαῶτις of the Greeks is to be found only in the Pooktoo rendering of Peshawur, viz. Pekawur; called so to this day, and very probably derived from "Pooktoo," Pooshtoo, and "wur," a door or entrance, the entrance to the Pooshtoo speaking tribes.

So many Mosaic and Afghan names found in their present habitat a thousand years before the Hijra, are proofs that the Afghans truly derive their origin from Israel, as they could not have been received from the Arabs with the religion of Muhammed, and lead at once to the important query, whether the sublime truths found in the older books of the Hindus may not have been derived from Mosaic traditions which must have been long preserved by these Israelitish tribes with the tenacity characteristic of their race.

We must not trust the particular accounts of the Afghans themselves in which they seek to connect themselves with Ali the great hero of Afghanistan. The utter confusion of all chronology in the narrative is in itself evidence of its fallacy. But the general deduction of their line from Israel is confirmed by many evidences; not the least of which is their close resemblance, moral and physical, to the Israelitish race. Of this derivation none but the children of Israel would boast, for the name is a byeword and reproach amongst all other nations.

Some have entertained the idea that Alexander crossed the Indus at Taxila, and that Atuk is the site of that city. But Arrian says, "But he passed over the river Indus, and there again Alexander burnt

are speaking of is upon the confines of Turkestan. Egypt, far more remote, was conquered by Tartars, 2150 B. C.

* These Mousikanoi are not to be confounded with the Moosa Khaun of Sind, on the Indus, who was most probably also an Afghan prince. The Afghans having always when they increased in power, subjected Sind to their rule.

† Aukna, in Punjaubi, to speak.

incense as was his custom ; and having refreshed at the Indus came to Taxila, a large and wealthy city, the greatest of those between the Indus and Hydaspes," &c. "And there again Alexander burnt incense in Taxila, as was his custom, and instituted gymnasia and horse races, &c. but having sent back Koinos's son, Polemocrat, to the river Indus that he might break up the boats, &c."

No one reading these passages can resist the conviction, that Alexander marched from the ferry of the Indus to Taxila. Strabo does not indicate the position of Taxila, saying only that "the Macedonians in the spring descended from the mountains of the Musikani to the plains and to Taxila, a large city." Pliny does not mention the city, but mentions the people Taxila beyond the river Indus. Plutarch, in his life of Alexander, mentions only the country of Taxiles as being the most fertile, abounding in excellent pasture, and described by some as equal in extent to Egypt. Chuch is celebrated for its fertility, the Indus formerly abounded in islands covered with pasture and with forests, and the Dunni district is still celebrated for its breed of horses.

In searching for the lost Taxila I found upon the right bank of the river Hurroh, N. West of Hussun Ubdal, the ruins of a town of which the name seems to be wholly lost. It is called now, like many other deserted sites, Kolia, or the ruins. It stood upon the old* high road from Rawulpindi to Atuk ; a road which for many years has been closed by the depredations of the Tarkhailis of Gundgurh, through the skirt of which mountain the road was led. The site is very cheerful on the high bank overhanging the river. The size of this town may have been about that of Hussun Ubdal. The stones of the old building have been used to build some modern huts and Tukhias. One of these has an inscription, a copy of which is appended. It is possible that with leisure I may be able to recover some more of the characters, traces of which are visible in a level light. There is little to induce the belief that this was a Greek town. It might however have been Taxila, which was not Greek, although it received a Macedonian garrison. It still belongs to the Tarkhaili clan.

* A road much more direct than the present and saving a detour of about ten miles. This road might be reopened at little expense. I brought my laden camels through it.

On Dust Whirlwinds and Cyclones. *By* P. F. H. Baddely, *Esq. M.D.; B. Arty. Lahore.*

"Who holds the furious storms in straiten'd reins,
And bids fierce Whirlwinds wheel his rapid car?"

Young.

(Continued from page 147.)

The Cyclone Compass, invented during the early part of December last, is intended to facilitate navigation in rotatory storms or Hurricanes.

The principle of its construction, is similar to that of the transparent Hurricane cards, invented by Sir William Reid, now in general use.

The chief advantage supposed to be connected with the Compass, is the facility with which it may be used even by persons unacquainted with the Law of Storms; a mere glance at the Compass, in whatever way placed, being sufficient to discover the bearing of the centre, and the ship's relative position, in a Hurricane.

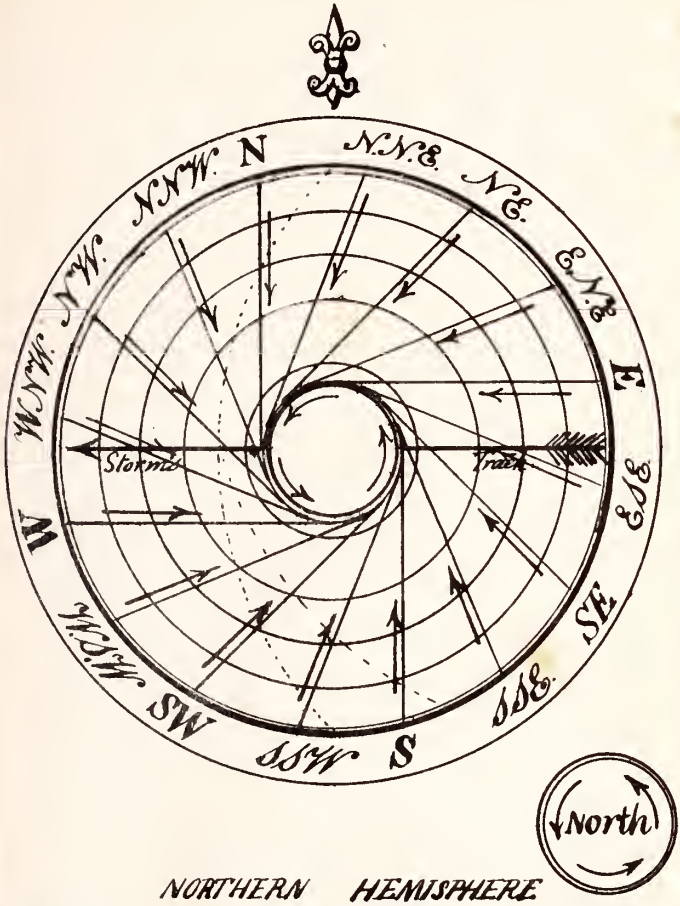
One instrument answers for both Hemispheres, and as it carries a magnet, which points North and South, it may serve for a compass to steer by—and by a slight modification of the present ship's Compass, it may be made to combine both uses in the same instrument. Pl. 1.

Another important advantage, is the rotatory and progressive motions that may be imparted to it, similar, it is believed, to the movements of the Cyclones themselves—by which means, the exact position and veerings of the winds all round the storm's circuit, may be accurately noted, and transferred to paper.

So that by its use, a more precise comprehension of the character of these rotatory storms may be acquired, and their study rendered interesting, by the probability that the nature of the laws that regulate them, hitherto apparently so complicated and inexplicable, may, by the new light thrown upon them, be better understood.

The accompanying plates 7 and 8 of Cyclone courses, are intended to shew what the instrument is capable of effecting, and that by its means Cyclone courses for every point in the compass, in the Northern and Southern Hemispheres, may without difficulty be drawn for the purpose of being used as charts of reference.

The motions of the sea, may likewise, by its means be studied with equal facility and interest. Vide Plates 9 and 10.



NORTHERN HEMISPHERE

P. Baddeley.

Storm Card.

The outer rim indicates the Wind points corresponding with the Compass points the centre transparent circle composed of centripidal at tangent lines, represents the direction of the winds surrounding a Cyclone in the Northern Hemisphere and is intended to revolve on a Centre, so as to admit of being set to the direction of the Storm's track, by means of the arrow.

The centre curved arrows, mark the rotation of the Electrical Zone or body of the Cyclone.

The Dotted lune marks the comparative strength and duration of the centripetal winds on either side of the Storm's track.

For the South, this is all reversed.

Description and use of the Cyclone Compass, Plates 5 and 6.

The Magnetic points north and south, and carries a light metal disk of Palladium, or other metal, marked with the *wind points*, and capable of being shifted and reversed for the northern and southern hemispheres; by which arrangement, the wind points, are always preserved in their respective positions. The disk is also grooved, for the purpose of being adjusted to the magnetic declination.

The transparent disk placed below this, with a metal rim, represents the body or zone of the Cyclone, and is marked with dotted radii or with thin wires, corresponding to the wind points, which also indicate the ship's place and the bearing of the centre; all which is understood by simply noticing the direction of the wind blowing at the time.

For instance, in a storm in the Northern Hemisphere with the wind at *South-East*, the bearing of the centre will be seen at a glance, to the *South-West;* with the wind at *South*, the bearing of the centre will be *West*.

For the Southern Hemisphere with the wind at *South-East*, the bearing of the centre will be *North-East;* and with the wind at *South*, the bearing of the centre will be *East*.

The transparent disk is fixed to a small cylinder, round which a piece of thread is wound from right to left, if required for the Northern Hemisphere; and from left to right, for the Southern.

The rim carries a pencil, or a pointed glass tube for iuk, when required to mark a course on paper.

Placing the Cyclone Compass over the ship's place dotted on a Chart laid perfectly flat on a table, and then pulling very gently on the thread in a supposed track, the peculiar motions of the Cyclone, as I understand it, both progressive and rotatory, will be exactly imitated, and the veering of the winds, and the direction in which the sea is propelled by them in different parts of the space over which the influence of the Storm extends for the time, may be satisfactorily and clearly demonstrated, as in the accompanying diagrams.

Opposite points on the rim of the transparent disk, will then be found to mark on one side a gentle curve, on the other a loop.

On the side of progression, while the Cyclone Compass sweeps a gentle curve, describing a small arc of a large circle, on the opposite or looped side, it will have passed over a semi-circle of small diameter.

The looped side of a Cyclone, is the one to be avoided; for it is in this portion of the storm, that the chief danger lies from the vortex and recurving of the storm, and the violent squalls and tumultuous seas. It is a question of the utmost importance to determine its particular position at any given time, as a knowledge of that would indicate the track of the storm, just as the track would shew the position of the loops, as may be observed in the diagram of Storm tracks for the Northern and Southern Hemispheres, Plate 11.

The Cyclone Compass, is adapted for both Hemispheres; for by removing the magnet and reversing the *wind-point disk*, and winding the thread round the cylinder in a contrary direction, as before explained, the change from one to the other Hemisphere is effected at once.

The peculiar curve of the Storm as delineated by the Cyclone Compass, together with certain unvarying indications of the approach of the dangerous vortex, such as a falling Barometer, rapidly veering wind, fierce squalls, cross seas, &c., may, to one acquainted with navigation, and the science of the Law of Storms, suggest rules, by which the exact position of the danger may at all times be determined and avoided.

A Hurricane, I have reason to believe from investigations into the nature of Dust Storms, is caused by a mass of Electro-magnetic rotating spirals, descending from the sky to the earth, and in conformity with a general spiral motion of its own, sweeping a Cyclonal course on the earth's surface, usually in some track.

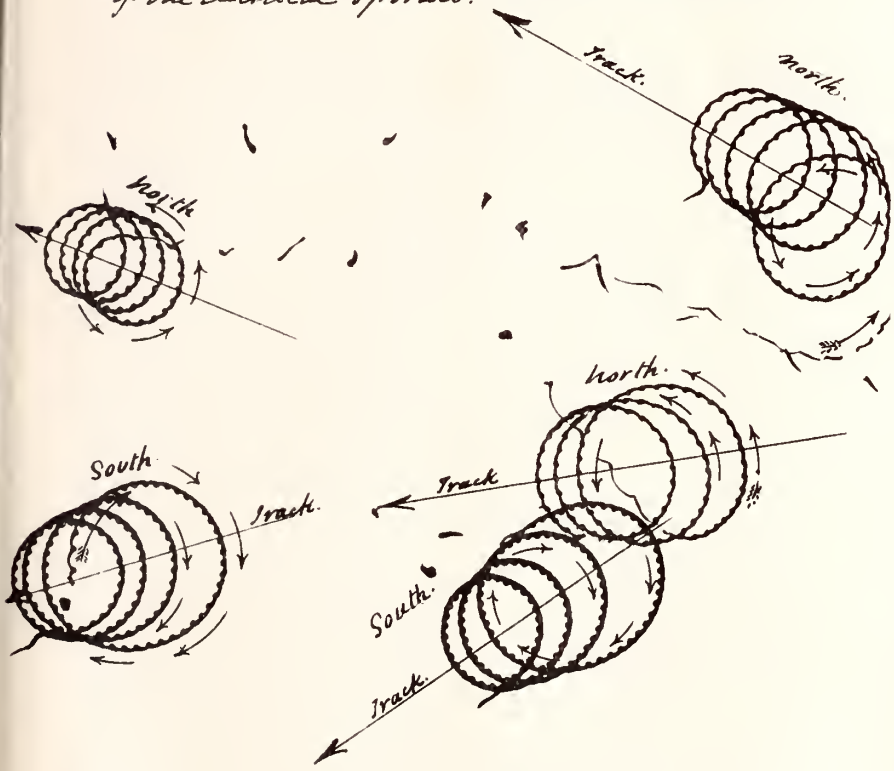
The body of such a storm is, I conceive, made up of a band of cylindrical beams or spirals moving with the storm, either singly, or in fasciculi, composing zones of all sizes, whirling their Cycloidal courses, while every separate beam or spiral rotates independently as it goes along.

The passage of the electrical spiral through the air, sets it in motion, and causes a wind to blow in the direction of its track, with more or less velocity; depending, seemingly, upon the rapidity of the passage and the tension of the electrical spiral itself.

These spirals are I believe the exciting cause of wind in all storms, and of the gusts or squalls in particular—and of *wind generally during the day time*, in Tropical climates.

Cyclones.

Electrical Zones, for the northern & Southern Hemispheres. The nodes represent the rotation of the Electrical Spirals.



It seems probable, that the entire zone of a Cyclone is not equally charged at the same instant, nor throughout its whole extent, with the electrical spirals; but that on the side of progression they are diffused or spread out, so as to occupy a large extent of surface; while on the looped side, or vortex of the Storm, there is a rapid convergence and concentration of them, accompanied with increased intensity of action, where conflicting winds and waves meeting, will, on the laws of interferences, destroy or counteract each other's effects—accounting for many strange phenomena, well known to sailors, observable in that quarter of the storm.

The marked fall of the Barometer as the vortex is approached may, possibly, be accounted for by the upward whirling motion imparted to the air, by the action of the electrical spirals, which thereabouts, are presumed to be highly concentrated; and the modus operandi may be thus explained.

The electrical spiral rotating and working like a screw, from above downwards, sets in motion by its centrifugal action a stratum of air immediately surrounding it—outside this again, another circle of winds will be found blowing centripetally; and the two meeting will, by their mutual action and reaction, continuous throughout, form an ascending spiral current of air, working a reversed spiral upwards, the two motions being well represented by two coils of wire wound in opposite directions laid one over the other.

At the outer verge of the side of progression, and at the tail of the Storm, where the electrical spirals may be presumed to be in a great measure absent, and the up-current consequently less, the Barometer is reported to stand much higher, than it does elsewhere in the body of the storm—the winds thereabouts being centripetal winds, blowing with more or less obliquity in the direction of the Storm's track, and caused by its action upon the air through which it has passed, as is the case in smaller whirlwinds.

This peculiar upward working spiral motion is, I think, the cause of the ascent of dust, in whirlwinds passing over a dry sandy soil, and of the ascent of water also in water spouts.

The size and form of the ultimate spiral seems to be always the same, and is about 12 inches in diameter and cylindrical; but its energy appears to suffer increase and diminution, attributable, perhaps, to the amount of electricity with which it happens to be charged.

Their rotatory actions seem to be continuous above as far as the eye can reach; and the cloud of dust carried up by them, is observed even at the height of some thousand feet, to possess the gyratory motion, similar to what is seen at the margin of cottony masses of Cumulo-Stratus on a clear sky; which rotatory motion of the cloud, may be due to the very same cause.

The enormous height to which the dust ascends, may without much stretch of imagination, satisfactorily account for the occasional fall of dust, containing microscopic animalcula.

The dust has doubtless been transported from its original bed by whirlwinds, sweeping over land once under water, now dry; carrying up into the higher regions of the atmosphere, the lighter portions of the soil, containing these microscopic remains—this seems to offer a simple solution of the enigma.

But it is a more curious question, what becomes of the enormous amount of dust, which over a broad band of the earth's surface, far beyond the limits of the ecliptic, is continually being whirled up into the higher regions of the atmosphere by these whirlwinds.

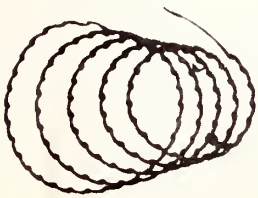
The cause of the storm wave, and the storm current, (which as Mr. Piddington observes in his Sailor's Horn Book, page 151,) "are produced by the forces of the various winds blowing round in the area of the Cyclone" will be readily understood by the tangent lines marking the progression of the sea, and the veering of the winds, Pl. 9 and 10.

The storm wave corresponding with the side of progression, must, I should think, generally be impelled to a distance in advance of the storm and give, as is said it frequently does, more timely notice of its existence and of its track than the Barometer.

The forces on that side (the side of progression) being of longer duration in one direction, and not counteracted by opposing winds and waves, as on the looped side of the storm.

As regards the reality of the spirals, I may remark, that their existence is not a matter of theory, but of fact, which I have repeatedly verified by observation, and have actually seen them most distinctly when rendered slightly opaque by fine dust; and there is no doubt in my mind, that they are permanent, and of a peculiar nature; and though I name them Electro-magnetic, my reasons for doing so, is in consequence of certain electrical phenomena usually attending them, and for want of a better name.


Cirrus.
Cumulo Strati
Scud
a cyclone.



The Aurora Borealis and Australis seen at the poles, may be due to an accumulation of the Electro-magnetic spirals circulating in the upper regions of the atmosphere at these particular points; and the ether, supposed to pervade space, may also be composed of this substance.

An illustration of the opposite rotations in the two hemispheres, which may possibly lead to the discovery of the laws themselves, seems to be afforded by the motion of fluids.

A body moved through water, from A to B, with moderate velocity, causes two eddies in the fluid, revolving in opposite directions, and progressing on either side of the line of motion, with a tendency as they advance, to be deflected from the line parallel to the line of motion, and to assume parabolic curves, as described in Plate 12. We have here three things: a fluid,—a motion imparted to it in a certain direction,—and a resisting medium: the result being opposite movements in the fluid; seemingly of the very character of those which influence the motion of the Cyclones.

Corresponding to these, there is the atmosphere;—the centrifugal action of the earth's rotation from west to east, greatest at the Equator, and uniform only on that line;—and thirdly, the earth's translation, or the impetus with which it is carried forward, in space, re-acting and producing the effect of a resisting medium. The very conditions requisite, perhaps, for giving these peculiar motions to the air at a certain height, and for communicating the same to matter of which the whirlwinds are said to be composed.

The eddies so formed, being diverted downwards to the earth's surface, just as we observe, under certain circumstances, the like motions in water, continued downwards beneath the surface; and once formed, these rotatory movements will continue, till friction or other counteracting effects cause their cessation.

Cyclones may be the means by which accumulated electricity in the atmosphere is gradually discharged, and they may thus become powerful means by which evaporation on a large scale is effected, and rain produced, and the Electro-magnetic spirals, having discharged their electricity and water, may be again lifted up to the higher regions of the atmosphere.

A Table of Analyses of Indian Coals; continued from that by Mr. JAS. PRINSEP, *(in Vol.* VII. *of Journal, p.* 197) *to the close of Vol.* XIX. *for* 1850; *and including Dr.* MCCLELLAND'S *Table in p.* 73 *of Coal Committee's Report No.* II.—

By HENRY PIDDINGTON, *Curator, Museum of Economic Geology.*

No.*	Journal and C. Com. Report.	Locality and Analyst.	Quality.	Sp. Gravity.	Water per cent.	In 100 Parts. Volatile Matter.	Carbon	Ash.	Per cent. of Ash in Coke.
77	J. Vol. VII. p. 706.	Mergui. *Jas. Prinsep.*	Lignites sent by Dr. Helfer No. 1	1.256	10.0	56.7	36.0	7.3	
			2	1.376	9.3	53.9	37.3	8.8	
			3	1.391	7.3	3.86	43.8	17.6	
		Ditto, Ditto.	Pitch Coal ditto ditto No. 1 rich flaming coal and close grained coke.	1.273	9.7	45.0	50.3	4.7	
			Ditto ditto ditto No. 2	1.280	8.2	48 9	46.7	4.4	
			Ditto ditto ditto No. 3	1.245	7.4	48.3	45.1	6.6	
78	C. C. R. Part I.		Ditto ditto ditto No. 4	1.251	7.6	48.2	48.7	3.1	
	Sec. VII. page 5.	Namroop Coal No. 1. Ditto.	Very ligneous.	1.302	..	48.9	47.7	3.4	
79	....	No. 2. Ditto.	More compact coal.	1.244	..	39.9	58.1	2.0	
80	page 12.	Chilmaree, *McClelland.*	....	1.392	..	50.0†	40.9	5.1	
81	C. C. R. IV. p. 180.	Moulmein. Mr. Blundell, *McClelland.*	Cannel coal.	1.177	..	42.8	54.6	2.6	

* The numbers are continued from Mr. JAS. PRINSEP'S Table, and I add to the present one a column of references to the Vol. and page of Journal, or Coal Committee's Reports, where the Analysis will be found, and the name of the Analyst, where given. Mr. PRINSEP'S Table goes to No. 59, and 17 more Analyses are added of imported coals, numbered 1 to 17, so that I have taken 76, as his last No. and 77, as our first.

† Including water.

Analyses of Indian Coals—Continued.

No.	Journal and C. Com. Report.	Locality and Analyst.	Quality.	Sp. Gravity.	Water per cent.	In 100 Parts.			Per cent. of Ash in Coke.
						Volatile Matter.	Carbon.	Ash.	
82	C. C. R. IV. p. 180.	Hoong; South of Ramree 6 miles, Capt. Bogle, *McClelland.*	Caking Coal,.....	1.32	7.6	36.	49.	15.	
83	....	Tyroo Ghat, Assam, Capt. Jenkins, *McC.*	Ditto,.....	1.3	..	40.	55.	5.	
84	....	Palamow Mirall, Mr. Tytler, *McC.*	Slate Coal,.....	1.26	..	44.	50.	6.	
85	....	Palamow, ditto, *McC.*	Slaty, Crop Coal,.....	1.48	..	32.	58.	10.	
86	....	Ditto Singra, ditto, *McC.*	Ditto,.....	1.2	..	25.	63.	12.	
87	....	Mergui, Lt. Hutchinson, *McC.*	Caking Coal, excellent,.....	1.27	..	55.	40.	5.	
88	....	Byrung Ponjie, Sylhet; Major Lister, *McC.*	Ditto,.....	1.3	..	34.	64.5	1.5	
89	....	Ditto, variety, ditto, *McC.*	Slaty, inferior, ...	1.4	..	25.	29.	46.	
90	....	Ditto, ditto, *McC.*	Surface Coal,.....	..	..	30.	50.	20.	
91	....	Ditto, a different sample, ditto, *McC.*	Caking Coal,.....	1.3	..	51.	42.	7.	
92	....	Chuppra, on the Soane, Mr. Ravenshaw *McC.*	Slate Coal, mixed, ...	1.5	..	32.	57.5	10.5	
93	....	Borneo, Capt. Johnston, *McC.*	Ditto, excellent, ...	1.27	..	59.6	34.	6.4	
94	....	Borhath, Assam, Lt. Strong, *McC.*	Caking Coal, ditto, ...	1.2	..	45.	52.7	2.3	
95	....	Borhath, another bed, Lt. Strong, *McC.*	Cannel Coal, excellent,.....	1.28	..	44.	48.	8.	
96	....	Cheduba, Arracan, Capt. Bogle, *McC.*	Ditto, inferior, ...	1.30	..	46.8	41.2	12.	

Analyses of Indian Coals—Continued.

No.	Journal and C. Com. Report.	Locality and Analyst.	Quality.	Sp. Gravity.	Water per cent.	In 100 Parts.			Per cent. of Ash in Coke.
						Volatile Matter.	Carbon.	Ash.	
97	C. C. R. IV. p. 180.	Khota, Siugrowly, Capt. Wroughton, *McClelland.*	Middling, ...	1.29	7.6	54.	32.2	13.8	
98	....	Jubbulpore, Dr. Spilsbury, *McC.*	Excellent, ...	1.49	..	50.	47.1	2.9	
99	....	Near Dearee, the Soane, Mr. Ravenshaw, *McC.*	Middling, ...	1.42	..	37.6	58.1	4.3	
100	....	Quillimané, (Cape) S. Africa, ditto.	Surface Coal,.....	1.6	..	23.2	40.16	36.6	
101	....	Tavoy River, Mr. Blundell, *McC.*	Cannel Coal, ...	1.72	..	62.	28.26	9.74	
102	....	Chittagong or Tipperah Hill, Mr. Sconce, *McC.*	Good Slaty Coal, ...	1.375	..	64.6	24.4	11.	
103	....	Petchelee Gulf, received thro' Capt. Johnston, *McC.*	Anthracite,.....	1.71	..	20.	74.	6.	
104	....	Doobradgepore, Mr. Jas. Pontet, *McC.*	Inferior Slaty Coal, ...	1.4	..	42.	33.	20.	
105	....	Jeypore, Upper Assam, Mr. F. R. Hampton, *McC.*	Superior, ...	1.3	..	48.	46.2	5.8	
106	....	Pulo Chermin, Borneo, Marine Board, *McC.*	Very superior, ...	1.34	..	64.	32.5	3.5	
107	....	Pulo Keng, Arreng, Borneo, ditto, *McC.*	Inferior,.....	1.39	..	43.	30.5	26.5	
108	....	Bikrampore, Cachar, Capt. Guthrie, *McC.*	Superior, ...	1.3	..	64.8	33.2	2.	

Analyses of Indian Coals—Continued.

No.	Journal and C. Com. Report.	Locality and Analyst.	Quality.	Sp. Gravity.	Water per cent.	In 100 Parts.			Per cent. of Ash in Coke.
						Volatile Matter.	Carbon.	Ash.	
109	C. C. R. IV. p. 180.	Gudada River, Dhubary, Mr. J. Bedford, *MeClelland.*	Inferior,.....	1.4	7.6	57.4	24.6	18.	
110	....	Bunarosee Caribari Hills, ditto, *MeC.*	Brown Coal, burns freely, ...	1.4	..	50.	40.6	9.4	
111	....	Mirampara, or Balajora Caribari Hills, ditto, *MeC.*	Ditto,.....	1.2	..	64.	26.	10.	
112	....	Salkora Caribari Hills, ditto, *MeC.*	Good Brown Coal, ...	1.3 to 1.4	..	70.	25.4	4.6	
113	....	New Mine? Burdwan? Major Henderson, *MeC.*	Superior, ...	1.3	..	36.	60.	4.	
114	....	Shanghai, (China,) Dr. G. Playfair, *MeC.*	Very superior, ...	1.29	..	33.6	64.	2.4	
115	....	Near the falls of the Jumoona, (Assam,) Major Jenkins, *MeC.*	Without exception the best specimen of Coal on the list, *MeC.*	1.2	..	46.	53.4	.6	
116	....	The bed of the Terro Nuddee, (Assam,) ditto, *MeC.*	Superior, ...	1.3	..	62.	35.4	2.8	
117	....	*a*, *b*, *c* Nicobar Island, Messrs Mackey and Co. *MeC.*	Weathered specimen, ...	1.3 1.3 1.3	.. .. ..	61.4 57. 49.	34.2 40. 46.	4.4 3. 5.	
118	....	Dikhoo, (Assam,) Capt. Rogers, *MeC.*	Most superior, ...	1.3	..	28.	66.	.6	
119	....	Dikhoo, a tributary of the Jumoona, 8 miles above the falls, Messrs Masters and Wood, *MeC.*	A dull Earthy Coal, ...	1.3	..	44.6	38.8	16.6	

Analyses of Indian Coals—Continued.

No.	Journal and C. Com. Report.	Locality and Analyst.	Quality.	Sp. Gravity.	Water per cent.	In 100 Parts.			Per cent. of Ash in Coke.
						Volatile Matter.	Carbon.	Ash.	
120	C. C. R. IV. p. 180.	Badam, Col. Ouseley, *McClelland.*	Very superior, ...	1.29	7.6	32.00	60.00	8.00	
			Good, ...	1.31	..	27.00	61.00	12.00	
121	....	Jubbulpore, Lieut.-Col. Cox, *McC.*	Cannel Coal, ...	1.3	..	59.00	37.00	4.00	
122	Vol. XIV. p. 34	Supposed Assam, *Piddington.*	Poor silicious Lignite, ...	1.34	12.00	26.40	31.60	29.20	
123	XVI. 371	Kyook Phyoo, *Pid.*	Volcanic Coal, ...	1.28	1.00	18.90	63.60	16.50	
124	XVII. 59	Burdwan, *Pid.*	Ball Coal, ...	1.37	5.00	29.00	57.00	9 00	
125	 168	Assam, Booree Dehing, *Pid.*	Cannel Coal, ...	1.31	5.50	28.00	56.50	10.00	
126	XVIII. 170	Prisco Pit, Newport, S. Wales, *Pid.*	Highly pyritous Coal, which ignited spontaneously, ...	1.29	2.25	24.50	69.00	4.75	
127	.... —	Ditto, *Pid.*	Top Coal of the same, ...	..	1.65	14.17	44.18	37.82	Saline 4.35
128	 412	Burdwan, *Pid.*	Matrix Coal of Ball Coal, ...	1.26	3.90	18.90	61.75	16.25	
129	XIX. 75	Ditto, *Pid.*	Ditto ditto, ...	1.34	..	28.00	59.60	12.40	
130	.... —	Ditto, *Pid.*	Ball Coal, ...	1.32	..	24.00	68.75	7.25	
131	 156	Labuan, *Pid.*	Bituminous Coal, ...	1.27	..	36.50	61.35	2.15	

PROCEEDINGS

OF THE

ASIATIC SOCIETY OF BENGAL.

MARCH, 1852.

The usual monthly meeting of the Society was held on the 3rd instant, at half-past 8 P. M.

J. R. COLVIN, Esq., Senior Member of the Council, present, in the Chair.

The proceedings of the last meeting were read and confirmed.

An ancient Hindu silver coin found in a chattee of common earthenware at Nagpore, and four Bactrian copper coins, were presented to the Society by Dr. J. Grant.

Sir H. M. Elliot presented eight Mohammedan silver coins for the Society's cabinet. (They have been described in the last Number of the Journal, No. 7 of 1851.)

A very interesting native picture by a Burmese artist, formerly attached to the Royal Court at Ava, was presented by Dr. A. Thomas of Ramree, through Capt. Sparks. The subject of the picture is thus described by Dr. Thomas:

"On one side of the picture is represented the Royal Palace and the Royal Monastery; the priests in their sacerdotal garb, and the White Elephant are all shown. On the other side is a grand procession, showing that a lad is about to enter the order of Priesthood. This picture while it affords us some partial insight into the rites and ceremonies of the Burmese religion, shows also what the artistic powers of a semi-civilized nation are."

The following report was submitted to the meeting by the Council:—

The Council having had under their consideration a proposal of Dr. A. Sprenger to print in the Bibliotheca Indica the following works: namely;—Hadykah, a Persian Poem, by Sanay, to be edited by Agha Mohammed Shoostry and Dr. A. Sprenger; the Hayát al Haywán of Damyry, to be edited by Moulovie Mohammed Wajyh; and the Itqán of Suyúty to be edited by Moulovies Busheerooddeen and Núrul Hakk; recommend that the offer be accepted and these works be printed in the Bibliotheca. A full account of these works will be given in the preface of each work agreeably to the resolution of the Society of the 5th December, 1851.

Bábu Gyanendro Mohun Tagore, duly proposed and seconded at the last meeting, was balloted for and elected an ordinary member.

W. Lees, Lieut., N. I., was proposed as an ordinary member of the Society by J. R. Colvin, Esq., and seconded by Dr. A. Sprenger.

Communications were received:—

1st.—From B. H. Hodgson, Esq., communicating a valuable paper entitled "On the Indo-Chinese hordes and their connexion with the Himalayans and Thibetans."

With reference to Mr. Hodgson's request for the loan of Klaproth's Asia Polyglotta and Adelung's Mithridates, the Rev. Mr. Kay promised to send the first named book to Mr. Hodgson.

2nd.—From Rev. J. Long—An Analysis of the Raghu Vansa.

3rd.—From Capt. Layard, through Capt. Thuillier, fac-simile of an Arabic inscription from Rájmahal.

4th.—From the same, in continuation of his letter received last month, with reference to his researches into the ruins of Gour, and enclosing a paper entitled "Nooks and Corners of India, No. 1."

The following is an extract from Capt. Layard's letter:—

"My short visit to Gour has been one of much interest to me, although from being obliged to return to the duties of my office I was unable to complete my sketches and enquiries in the southern suburbs of the city near Chandnee. I was fortunately able to visit the whole of the northern portion of the ruins as far as Gungerampore on the banks of the Kalindree, which I take to be the most ancient part of the city, or rather *the* Gour of the Hindus, previous to the invasion of the Mussalman conqueror Mahommed Bukhtyar. Besides sketches of all the ruins, I have taken drawings of many remains of architec-

ture, of columns, cornices, friezes, &c., scattered about the jungles and built into mosques, &c., also of many ancient and curious sculptures which, with the kind assistance of Mr. Gray, of Goamutty, I have been able to collect. Owing to the weight of the stoues I have left all at Goamutty, for transport to Berhampore during the rains, deferring their transit to the Society's Museum until I learn from you whether they would be acceptable to the Society or not ; otherwise Mr. Gray concurs with me in my intention of presenting them to the British Museum.

" The principal sculpture I have to offer now, consists of a very beautifully carved image of Soorya highly relieved and surrounded by numerous smaller figures, standing on the car drawn by the seven coursers of the Sun driven by Arun : the height of the principal figure is about $2\frac{1}{2}$ feet.

" Coleman, in his mythology of the Hindus gives a description of Soorya, and drawing of an image at Benares (if I remember right), but this sculpture which I was fortunate enough to find in the jungle near Gungerampore, appears to be far superior, and much more elaborately ornamented than that described by Coleman, or even those mentioned in Buchanan Hamilton's work. Next to this stone, I must mention one found by Mr. Gray, which represents a female figure lying on a richly ornamented couch with an infant by its side, the lady is being shampooed by a female attendant. There are several other figures on the stone and amongst them a row of presiding Deities on the upper portion. The whole is beautifully carved in very high relief and slightly mutilated. I have another portion of a stone representing the same scene as the above, but very much smaller, and so much destroyed by having been cut up, that it is not worth offering to the Museum. There are several other sculptures more or less ancient and curious, which I can describe hereafter, whenever they reach from Goamutty.

" I have taken impression on cloth of all inscriptions lying about the jungles or fixed on the mosques, which I will at leasure try to decipher or send to you to have deciphered in Calcutta, or bring them down with me hereafter if I can get leave of absence for a few days. There are also some copper coins which I was fortunate enough to pick up (mostly from coolies who dig for bricks) and which may lead

to some information regarding the sketches of Gour. You are at liberty to make the subject of my letter known to the Asiatic Society but it has been written hurriedly and in the midst of much office work, and therefore I fear not over-explicit."

5th.—A letter was read from Mr. Bayley, stating that he had seen the figure of the Jupiter in the Society's possession and had a duplicate of it, which was somewhat imperfect. He further stated that want of time will prevent his finishing his note on Bactrian Antiquities, asked for by the Society for some time, but that on his return to Kote Kangra he will be able to send it to the Society, when he will also send a notice of four new Bactrian coins.

The Chairman read a letter from the Secretary to the Government of India forwarding in compliance with the wish of Major Kittoe a collection of sculpture for exhibition to the members of the Society; and then proposed that it be referred to the Council to consider and report as to the desirableness of securing fac-similes or engravings of either of the inscriptions or figures for the purposes of the Society and on the probable cost at which that object could be carried out. The motion having been seconded by Mr. Heatly was carried nem. con.

Confirmed 7th April 1852.

(Signed) J. W. Colvile.

The Librarian submitted the following list of books added to the Library since the last meeting.

Presented.

The Sandhya or the daily Prayers of the Brahmans illustrated in a series of Original Drawings. By Mrs. S. C. Belnos.—Presented by the Government of Bengal.

The Journal of the Indian Archipelago for December, 1851.—By the Editor.

Smithsonian Contributions to Knowledge, Vol. III.—Presented by the Smithsonian Institution, Washington.

Fourth Annual Report of the Board of Regents of the Smithsonian Institution for the year 1849.—By the same.

Report to the Smithsonian Institution on the History of the Discovery of Neptune. By Benjamin A. Gould, Jr., 8vo. Pamphlet.—By the same.

Notices of the Public Libraries in the United States of America. By Charles C. Jewett, Washington, 1851, 8vo. Pamphlet.—By the same.

Proceedings of the American Association for the Advancement of Science. Fourth meeting held at the Haven, August 1850, Washington, 1851, 8vo.—By the same.

Historical and Statistical Information respecting the History, condition and prospects of the Indian Tribes of the United States. Collected and prepared under the direction of the Bureau of Indian affairs per Act of Congress of March 3rd 1847.—By Henry R. Schoolcraft, Part I. Philadelphia, 1851. Presented by L. Lea, Esq.

Recueil des Actes de L'Académie des Sciences, Belles Lettres et Arts de Bordeaux. Treizième année 1851, 1st Tremestre.—By the Academy.

The Oriental Christian Spectator, for January, 1852.—By the Editor.

The Oriental Baptist, for March, 1852.—By the Editor.

The Calcutta Christian Observer for March, 1852.—By the Editors.

The Upadeshak No. 63.—By the Editor.

Satyárnab for December, 1851, January and February, 1852.—By the Rev. J. Long.

The Bengali Instructor, No. 4.—By the same.

Tattwabodhiní Patriká, No. 103.—By the Tattwabodhini' Shabha'.

The relation of the mind to external objects (Bengali,) Part I. By Bábu Akshayakumára Datta.—By the Author.

The Missionary for February, 1852.—By the Editor.

The Benares Magazine, No. 31.—By the Editor.

Report of the Calcutta Public Library for 1851.—By the Curators of the Library.

The Purnachandrodaya, a Bengáli Newspaper, for February, 1852.—By the Editor.

The Citizen, for February, 1852.—By the Editor.

The Indian Charter, for February, 1852.—By the Editor.

Purchased.

Comptes Rendus, Nos. 15 to 21, for 1851.

Journal des Savants for October, 1851.

Annals and Magazine of Natural History for December, 1851.

Meteorological Register kept at the Surveyor General's Office, Calcutta, for the Month of March, 1852.

Date.	Observations made at Sun-rise.						Maximum Pressure observed at 9 h. 50 m.						Observations made at Apparent Noon.					
	Bar. red. to 32° F.	Temperature.			Wind.	Aspect of Sky.	Bar. red. to 32° F.	Temperature.			Wind.	Aspect of Sky.	Bar. red. to 32° F.	Temperature.			Wind.	Aspect of Sky.
		Of Mer.	Of Air.	W. Bulb.	Direction at Sun-rise.			Of Mer.	Of Air.	W. Bulb.	Direction at 9h 50m.			Of Mer.	Of Air.	W. Bulb.	Direction at Noon.	
	Inches	°	°	°			Inches	°	°	°			Inches	°	°	°		
1	29.922	74.2	74.4	73.0	S. W.	Clear	29.971	78.7	81.2	76.4	S. W.	Cumuli	29.927	85.3	87.4	76.6	S.	Cumuli
2	.832	75.0	75.3	73.2	S. W.	Cloudy	.881	80 4	82.6	75.4	S. S. W.	Clear	.851	86.6	89.0	76.4	S. S. W.	Clear
3	.839	71.6	71.8	70.0	S. S. W.	Clear	.905	79 0	81.8	77.8	S. S. W.	Cumuli	.866	84.0	85.3	73.2	W.N.W.	Cumuli
4	.847	76.6	76.6	75.4	S. W.	Ditto	.930	79 4	80.8	64.0	N. N. E	Cirro-strati	.913	82.2	82.4	64.4	N.	Cirro-strati
5	.925	71.6	71.7	68.8	N. W.	Ditto	30.017	77.4	80.0	63 3	N.	Clear	.972	83.2	84.6	63.6	N. N.W.	Cirro-cumuli
6	.949	69.4	69 7	65.6	N. W.	Cirro-strati	.008	76.3	79.3	74.2	W.	Ditto	.964	82.4	85.0	70.2	N. W.	Clear
7S.	.896	74.0	74.2	72.8	S.	Clear	29.954	79 5	80.4	75.4	W. S.W.	Cumulo-strati	.928	83.0	84.6	75.6	S. W.	Cumulo-strati
8	.960	70.7	70.6	68.6	W.	Ditto	30.025	78.3	80.6	63.4	N. W.	Clear	.979	81.8	83.5	63.3	N. W.	Clear
9	.941	71.6	71.8	68.3	W.	Ditto	29.993	77.9	80.4	72.2	W.	Ditto	.947	83.3	85.6	67.4	N. W.	Ditto
10	.900	72.2	72.5	71.3	S.	Foggy	.938	77.0	78.8	75.4	W.	Cumuli	.868	83.2	84.6	76.0	S.	Cumuli
11	.848	74.3	74.5	72.8	S.	Cumuli	.920	79.5	81.7	76.3	W.	Clear	.882	84.7	86.6	74.1	W. S.W.	Clear
12	.929	75.8	75.9	73.6	S.	Cirro-strati	.973	81.9	83.7	75.3	S. W.	Cirro-strati	.914	86 2	87.0	77.7	S.	Cirro-strati
13	.867	76.2	76.3	74.0	S.	Cloudy	.883	81.3	83.2	76.0	S. S. W.	Clear	.835	86.4	87.6	77.2	S.	Clear
14S.	.849	70.8	70.8	67.4	N. E.	Ditto	.877	76 7	79.9	75.4	S. S. E.	Cirro-strati	.824	83.8	84.9	75.9	S.	Cumuli
15	.901	70.6	70.4	68.7	N. N. E.	Ditto	.924	70.8	71.6	68.3	E. S. E.	Cloudy	.898	75.6	78.0	71.4	S. E.	Ditto
16	.887	72.8	72.6	71.6	S. S. W.	Clear	.955	79.0	80.6	75.4	W. S.W.	Cumuli	.921	83.4	85.4	77.3	S.	Cumulo-strati
17	.903	74.6	74.8	73.4	S. W.	Cirro-strati	.963	78.8	80 2	76.3	S. W.	Cumulo-strati	.904	83.3	84 8	77.2	S. W.	Ditto
18	.828	72.2	72.0	68.9	S. W.	Cloudy	.885	78.4	81.0	76.1	W.S.W.	Cirro-cumuli	.871	83.4	85.2	76.9	S. W.	Ditto
19	.819	72.3	72.4	71.0	S. E.	Ditto	.892	78 0	79.8	76 4	S. E.	Cloudy	.867	78.5	77.6	73.0	S. W.	Rain-thundering
20	.890	70.8	70.8	69.5	W.	Cirro-strati	.960	77.0	79.4	74.0	S.	Cumuli	.923	81.8	83.0	74.0	S. W.	Cumuli
21S.	.890	67.4	67.0	66 0	S. E.	Cloudy	.930	71.3	73 0	69 0	W.S. W.	Cirro-strati	.908	76.4	78.2	72.0	W.S.W.	Ditto
22	.884	68.3	68.2	66.8	N. W.	Cirro-strati	.952	72.0	73.0	69.2	W.S. W.	Cloudy	.918	76 9	79.0	72.0	W.	Cirro-strati
23	.857	68.0	68.0	66.8	S.	Ditto	.927	76.6	78.8	72 0	S. W.	Cumuli	.895	81.5	83.0	72.4	S. W.	Cumuli
24	.841	70.7	70.4	68.6	S.	Ditto	.888	79.3	81.8	75.3	S. S. W.	Ditto	.848	83.3	84.2	76.2	S. S. W.	Ditto
25	.845	69.4	69.3	68.4	S. E.	Clear	.896	75.0	76.9	71.4	W.N.W.	Ditto	.858	78.6	79 5	72 2	N. W.	Cumulo-strati
26	.761	69.3	68.4	67.0	S. E.	Cloudy	.815	71.0	72.0	69.0	S. S. E.	Cloudy	.787	75 3	76.3	71.0	S. W.	Cloudy
27	.640	69.8	69.8	68.5	S.	Ditto	.690	72.2	73.2	67.3	N. W.	Cumulo-strati	.657	74.3	75.0	66.1	N. W.	Cumulo-strati
28S.	.748	66.2	65.4	62.8	S. W.	Clear	.837	74.0	75.4	65.5	W.	Clear	.808	78.0	79.0	65 6	W.N.W.	Clear
29	.769	68.6	68.9	65.4	S.	Cirro-strati	.821	77.6	80.0	71.4	W.S. W.	Ditto	.777	83 2	85.0	70.0	S. W.	Ditto
30	.687	73.4	73.5	72.2	S.	Clear	.737	80 0	82.5	75.6	S. S. W.	Ditto	.696	86.4	88 0	75.5	S. W.	Ditto
31	.720	77.5	77.7	76.0	S. W.	Ditto	.819	81.6	82.3	77.4	W.	Cirro-cumuli	.756	87.1	89.2	77.0	E.	Cirro-cumuli
Mean	29.851	71.8	71 8	69.9	....	.....	29.909	77.3	79.2	72.6	....	.....	29.870	82.0	83.5	73.0	....	.....

Observations made at 2h. 40m.						Minimum Pressure observed at 4 p. m.						Observations made at sun-set.						Maximum and Minimum Thermometer.			Max. Therm. in Sun's rays.	Rain Gauges. Elevations.		Moon's Phases	Date.
Bar. red. to 32° F.	Temperature. Of Mer.	Of Air.	W. Bulb.	Wind. Direction at 2h 40m p. m.	Aspect of Sky.	Bar. red. to 32° F.	Temperature. Of Mer.	Of Air.	W. Bulb.	Wind. Direction at 4 p. m.	Aspect of Sky.	Bar. red. to 32° F.	Temperature. Of Mer.	Of Air.	W. Bulb.	Wind. Direction at Sun-set.	Aspect of Sky.	Max.	Mean.	Min.		Feet. 60. Upper	Feet. 5. Lower		
Inches	°	°	°			Inches	°	°	°			Inches	°	°	°			°	°	°	°	Inch.	Inch.		
29.844	90.0	90.7	78.6	S.S.W	Cumuli	29.827	90.3	90.4	77.8	S.	Clear	29.837	86.4	84.8	77.2	S.	Clear	91.6	82.3	73.0	106.3	..	..		1
.762	90.0	90.3	78.3	S.	Clear	.738	89.8	89.3	76.7	S.	Ditto	.724	85.7	84.0	76.4	S. shp.	Cloudy to W.	91.3	81.9	72.4	103.8	1.29	1.36		2
.781	87.6	88.4	72.6	W.	Ditto	.762	88.7	89.2	73.0	S. W.	Ditto	.762	86 3	84.6	76.4	W.	Clear	89.4	79.1	68 8	105.3	..	..		3
.842	83.9	84.0	64.2	N. W.	Cirro-strati	.819	85.0	85.2	65.2	w.n.w	Cirro-strati	.829	83 4	82.0	67.0	N N W	Cloudy	85.3	80.3	75.2	96.6	..	..		4
.889	86.4	87.0	64.4	N. W.	Clear	.883	87.3	87.5	65.0	N. W.	Ditto	.873	84.8	82.8	66.2	S.	Cirro-strati	88.0	79.1	70.2	101.0	..	..	⊙23h.	5
.878	87.0	87.6	69.4	S. E.	Ditto	.861	87.4	87.0	68.0	S.	Clear	.859	84.8	83.8	70.8	S.	Ditto	88.5	78.0	67.5	105.0	..	..		6
.860	86.0	86.6	75.2	W.	Cumuli	.848	87 0	87.4	76.3	W.	Cumuli	.862	85.3	84.4	75 6	W.	Ditto	88 0	80.2	72.4	98.4	..	..		7
.890	86 0	87.0	65.0	N. W.	Clear	.878	86.2	86.9	65.0	N. W.	Clear	.888	84 0	81.9	65.5	S.	Clear	86 9	78.2	69 5	102 8	..	..		8
.861	87.5	88.5	66.7	W S W	Ditto	.843	88.5	89.0	67.4	WSW	Ditto	.832	86.0	84.0	67.9	S.	Ditto	89.3	79.8	70.2	103.6	..	..		9
.783	87.5	88.3	75.8	w.n.w	Cumuli	.764	88.6	89.3	69.4	SS.W.	Cumuli	.734	87.0	85.0	71.2	S. E.	Cumuli	89.0	80 1	71.2	103.6	..	..		10
.810	89.5	90.6	73.4	S. W.	Ditto	.786	90 6	91 3	71.2	W.	Clear	.804	87.7	86.6	73.2	S. E.	Cumulo-strati	91.0	81.8	72.6	109.2	..	..		11
.853	87.8	87.4	78.0	S.	Cirro-strati	.843	87.3	87 2	76.4	SS.W.	Cirro-strati	.848	83.8	83.0	75.8	S	Cirro-strati	89 0	81.5	74.0	102 0	..	..	☾14h.	12
.761	87.6	86.2	78.0	S.S.W.	Cloudy	.757	83.7	82.6	76.4	S.	Cloudy	.816	80.8	79.7	76.7	S. W.	Rain, Thundrg.	89.2	81.7	74.2	101.0	0.19	0.26		13
.730	87 0	87.4	78.4	S.S.W.	Cumuli	.685	86.0	84.4	76.3	S.	Ditto	.746	82.0	78 9	73.0	N N W	Cloudy	88.4	78.7	68.9	101.2	0.40	0.46		14
.827	81.5	82.0	73.3	S.	Ditto	.814	82.4	82.0	72.9	S.	Clear	.828	80.0	78.3	72.4	S.	Cirro-strati	83.0	75.1	67.2	97.4	..	..		15
.837	87.4	88.2	78.0	S.	Cumulo-strati	.829	87.4	87.0	77.4	S.S.E.	Cloudy	.837	83.4	82 4	75.7	S.S.W.	Ditto	88.7	79.7	70.6	104.0	..	..		16
.824	87.2	88.0	76.6	S.	Ditto	.797	87.3	87.4	75.5	S.	Cirro-strati	.785	84.4	83.0	75 0	S.	Ditto	88.0	80.4	72.8	105.0	0 73	0.74		17
.781	86.2	85.9	77.0	S.	Ditto	.762	84.7	84.0	77.3	S. E.	Cloudy	.810	76.4	74.6	70.8	N.	Cloudy	87.6	78.9	70.2	105.6	0.12	0.14		18
.774	82.7	84.5	77.3	S. W.	Ditto	.783	83.4	83.5	75.2	S. W.	Cumulo-strati	.836	76.5	75 2	70.6	N. W.	Ditto	84.7	77.2	69.6	103.2	0.05	0 05		19
.837	85.4	85.7	73.4	W.	Cloudy	.805	82.9	80 2	72.8	S.	Cloudy	.803	77.0	76.2	70.7	S.	Cirro-strati	86.2	77.4	69 1	101.0	0.71	0.74	●12h.	20
.814	81.3	82.3	73.0	S.	Cumuli	.809	82.8	83.0	72.6	N. W.	Cirro-strati	.826	81 0	79 4	72.4	S. W.	Cloudy	83.4	74.3	65.1	99.4	0.05	0.06		21
.822	82.6	82.8	73.2	S.	Cumulo-strati	.814	82.0	81.6	71.6	S. W.	Cloudy	.809	79.0	78 3	73.0	S.	Cirro-strati	83.6	76.2	68.7	98.0	..	..		22
.805	85.3	85 0	75.0	S. W.	Ditto	.781	85.5	85.4	75 6	SS.W.	Cirro-strati	.818	81.2	79 0	72.7	S.	Raining	86.5	77.2	67.8	104.6	0.05	0.05		23
.739	85.4	85.0	75.4	S.S.W.	Ditto	.771	83.0	80.6	72.4	S.	Cloudy	.855	73.0	71.0	69.4	S.	Ditto	86.5	78 1	69.7	102.4	0.46	0.50		24
.797	81.5	82.4	73.2	W.	Cumuli	.758	83.4	83.9	73.6	N. W.	Cumulo-strati	.748	81.3	80.2	74.0	S. E.	Cirro-cumuli	84.0	76.1	68.2	101 0	1.25	1.25		25
.698	77.4	77.9	71.0	S.S.W.	Cloudy	.681	77.2	77.0	70.3	WSW	Ditto	.685	77.8	76.4	71.9	S.	Cloudy	80.0	73.6	67.2	94.0	0 43	0.47		26
.603	76.5	77.2	67.8	N. W.	Cumulo-strati	.599	78.0	77.4	66.4	N. W.	Ditto	.630	76.2	75.0	65.6	N. W.	Cumulo-strati	78.2	72.7	67.2	89.7	..	..		27
.770	81.0	81.5	66.4	S. W.	Cumuli	.744	82.0	81.8	66.2	WSW	Clear	.747	79.8	78.0	69.0	S.	Clear	82.4	73.8	65.2	96.4	..	..	☽14h.	28
.706	87.4	88.2	70.8	S. W.	Clear	.679	88.4	88.8	69.6	S. W.	Ditto	.685	84.0	81.8	71.0	S.	Ditto	89.0	78.2	67.4	104 0	..	..		29
.643	90.6	92.0	75.2	S. W.	Ditto	.628	91 2	90.6	77 8	S.	Ditto	.633	86.2	84.4	77.4	S.	Ditto	92.4	82.6	72 7	108.2	..	..		30
.714	90.7	92.0	75.3	E. SE.	Cirro-cumuli	.704	91.0	91.6	76.8	W.	Cloudy	.704	86.6	85.0	78.4	N. E.	Cloudy	91.8	84.2	76.0	111.6	..	..		31
29.791	85.6	86.1	73.2	....	.....	29.776	85.8	85.6	72 5	....	.....	29.789	82.3	80.8	72.4	....	.....	87.1	78.7	70.2	102.1	5.74	6.08	..	..

Chart
TO THE
TWENTY-FIRST MEMOIR
on the
Law of Storms in India
Being on
THE MADRAS CYCLONE
of H.M.S. Fox
2nd to 5th May
1851
By
Henry Piddington

80° 85° 90°

15° 10° 5°

Vizagapatam

Masulipatam

3rd Parrigon

5th 15th

4th

Cath. Apcar

4th

5th

1st May Ostrich

3rd May Hyderabad

Centre 5th at 3 A.M.

MADRAS

3rd Mary Harrison

2nd May

6th May

30th April Atalanta

Centre 4th

3rd

PONDICHERRY

Porto Novo

Tranquebar

Atalanta

Joseph Manock

Centre 3rd

Centre 2nd

2nd May Cath. Apcar

Hugh Lindsay

Pt Calymere

H.M.S. Fox

5th May Sarah

30th April Mary Ann

6th

1st May H.M.S. Fox

3rd

4th

Tuticorin

Trincomalee

Batticolo

30th April Hannah

CEYLON

CANDY

Galle

Dondra Head

1st May Precursor

6th

4th

3rd

2nd April Diana

Drawn on Stone by Abdul Hakeem.